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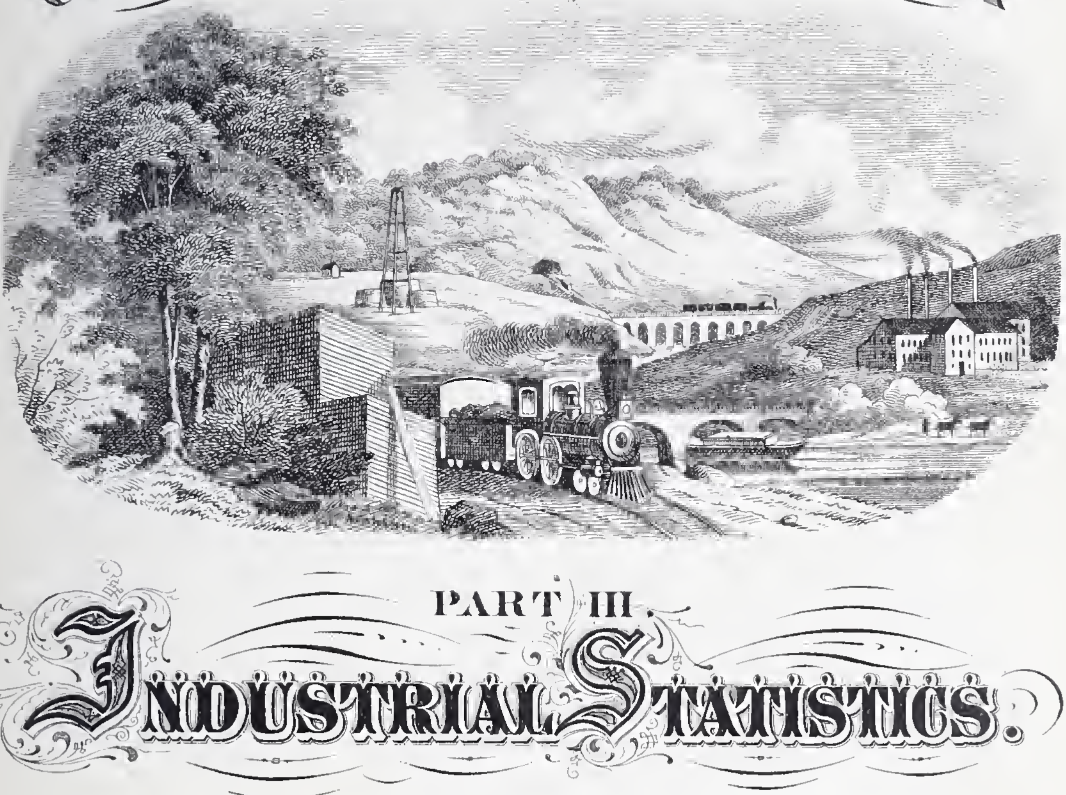
# ANNUAL REPORT

OF THE

# Secretary of Internal Affairs

OF THE

# COMMONWEALTH OF PENNSYLVANIA



PART III.

# INDUSTRIAL STATISTICS.

VOL. X

1881-82.

HARRISBURG
LANE S. HART,
STATE PRINTER AND BINDER.
1883.

#331
P3-1882

# REPORT

OF THE

# BUREAU OF INDUSTRIAL STATISTICS.

DEPARTMENT OF INTERNAL AFFAIRS,
BUREAU OF INDUSTRIAL STATISTICS,
HARRISBURG, *1883.*

Honorable AARON K. DUNKEL,
*Secretary of Internal Affairs:*

SIR: I herewith have the honor to present the tenth annual report of the Bureau of Industrial Statistics, and the fourth under your official term as Secretary of Internal Affairs.

The following tables are an exhibit of the number of blanks issued and returned, and which are embodied in the present report:

## INDUSTRIES.

| INDUSTRIES. | Number issued. | Number returned. | INDUSTRIES. | Number issued. | Number returned. |
|---|---|---|---|---|---|
| Agricultural Implements, | 23 | 11 | Iron tube works, | 15 | 9 |
| Air brakes, | 1 | 1 | Iron wire works, | 10 | 4 |
| Boots and shoes, | 163 | 67 | Lumber and saw-mills, | 333 | 168 |
| Brass foundries, | 35 | 13 | Morocco, | 33 | 23 |
| Bridge building, | 7 | 7 | Paper. | 42 | 22 |
| Car building, | 23 | 11 | Planing-mills, &c., | 114 | 47 |
| Carriages and wagons, | 75 | 26 | Railroads. | 19 | 16 |
| Coal mining, (anthracite,) | 155 | 144 | Safes and locks, | 10 | 3 |
| Coal mining, (bituminous,) | 355 | 327 | Sash and doors, | 38 | 20 |
| Cooperage, | 15 | 8 | Slate, | 20 | 10 |
| Copper, | 3 | 3 | Steel (Bessemer,) | 7 | 4 |
| Furniture, | 54 | 24 | Steel, (crucible, cast, &c.,) | 58 | 44 |
| Glass. (window. flint, and green,) | 71 | 46 | Tanneries, | 840 | 390 |
| Iron blast furnaces, | 169 | 165 | Tanneries, calf, kid, | 10 | 6 |
| Iron bloomaries, | 29 | 26 | Tanneries, sheep skin, | 15 | 5 |
| Iron boiler works, | 31 | 8 | Textile fabrics, (carpets,) | 135 | 115 |
| Iron bolt and nut works, | 10 | 2 | Textile fabrics. (cotton,) | 62 | 56 |
| Iron chains, | 6 | 3 | Textile fabrics (cotton and woolen,) | 87 | 68 |
| Iron fences, &c., | 11 | 3 | Textile fabrics, (hosiery & knit goods,) | 119 | 101 |
| Iron forges, | 16 | 6 | Textile fabrics, (hats,) | 23 | 21 |
| Iron foundries and machine shops, | 411 | 209 | Textile fabrics, (silk and silk mixed goods.) | 41 | 31 |
| Iron, (galvanized,) | 7 | 3 | Textile fabrics, (woolen,) | 72 | 60 |
| Iron hinges, | 3 | 1 | Textile fabrics, (yarns.) | 123 | 101 |
| Iron lightning rods, | 3 | 1 | Textile fabrics, (bleeching, dyeing, &c.,) | 34 | 22 |
| Iron rolling-mills, | 142 | 139 | Tools, | 7 | 4 |
| Iron roof frames, &c., | 3 | 1 | | | |
| Iron spikes and rivets, | 5 | 2 | | | |

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## OCCUPATIONS.

| OCCUPATIONS. | Number issued. | Number returned. | OCCUPATIONS. | Number issued. | Number returned. |
|---|---|---|---|---|---|
| Beamers, | 2 | 2 | Iron and steel workers—*Continued.* | | |
| Blacksmiths, | 13 | 7 | wire drawers, | 2 | |
| Bricklayers, | 5 | 3 | not designated, | 10 | 9 |
| Cabinet-makers, | 6 | 5 | Loom fixers, | 1 | 1 |
| Car builders, | 3 | 1 | Machinists, | 6 | 6 |
| Car inspectors, | 1 | 1 | Miners—coal, | 54 | 30 |
| Carders and spinners, | 7 | 2 | Moulders, | 8 | 6 |
| Carpenters, | 13 | 11 | Painters, | 5 | 4 |
| Cigar-makers, | 9 | 6 | Pattern-makers, | 3 | 1 |
| Cloth finishers, | 1 | | Pickers, | 1 | |
| Coachsmiths, | 1 | 1 | Plasterers, | 3 | 3 |
| Engineers, | 10 | 6 | Printers, | 4 | 1 |
| Firemen, | 4 | 2 | Shoe-makers, | 9 | 4 |
| Glass-blowers, | 8 | 5 | Stone masons, | 11 | 10 |
| Iron and steel workers— | | | Tanners, | 6 | 5 |
| blast furnace employees, | 6 | 3 | Twisters, | 2 | 1 |
| forgemen, | 9 | 3 | Wagon-makers, | 10 | 4 |
| refiners, | 1 | | Warpers, | 4 | 2 |
| puddlers, | 10 | 5 | Weavers, | 10 | 3 |
| heaters, | 4 | 1 | Weavers, carpet, | 5 | 1 |
| rollers, | 2 | 1 | Wheelwrights, | 5 | 4 |
| nailers, | 8 | 3 | | | |

Much matter and material were obtained through personal effort, and the classifications of production, &c., are made by counties, thus meeting the objections of many individuals who are opposed to showing the full extent of their business, and making it a matter of general publicity. The increased production given over that of last year is not so much the result of actual increase, but is to be attributed more particularly to the efficiency of the Bureau in securing returns.

The relations between capital and labor during the year were seriously disturbed, the difficulties arising from a variety of causes, the most prominent of which are included in the historical sketch beginning on page 144. Aside from these disputes, grave complaints are heard relative to the conditions and the disadvantages surrounding workmen while in the performance of their day's work. Prominent in this particular are those who follow the occupation of coal mining, and, with a view to better their condition, they periodically seek relief at the doors of our legislative halls by demanding that safety to life and limb, and a fair, impartial, and permanent method for measuring or weighing the result of their labor, and computing their earnings, shall be entrenched within the pale of law. The prolonged appeal of the bituminous coal miners, asking that cars shall be periodically measured and uniformly branded ; that scales used in weighing coal shall be so constructed and kept that under no circumstances shall more than seventy-six pounds be exacted for a bushel, nor more than two thousand pounds to a ton ; and that the duties of faithfully enforcing the same shall be intrusted to some public and impartial official, be engrafted into, and enforced by statute, should be heeded, and the relief granted. By its proper observance, and uniform and impartial enforcement, no harm can come to the upright and honorable operator, while those who would not hesitate to steal the earnings of the miner should be taught that this is the most menial of crimes ; and that, in justice to the poor and dependent, and in conformity to the genius of our Government, must be suppressed. On the other hand, it would allay the manifest discontent, suspicion, and misgivings of the miner, and thus remove one of the great causes from whence comes the frequent and apparent unavoidable strikes. Laws for the regulation, inspection, and drainage of coal mines are numerous on our statute books. They are there, not so much from a foresight or desire to prevent what might occur, but rather in response to the dead and dying, and in answer to the pitiful wail of the widows and orphans of those whose lives were sacrificed for the lack of proper and safe methods in the pursuit of their occupation. Since these enactments, defects have appeared, to improve which has occupied considerable of the time of legislators. While these imperfections have called forth the best energies of many of our most skilled and conscientious citizens in an effort to improve them, it has also brought forth the quibbler, as well as the aspiring demagogue, who, in order to be great in his own estimation, at least, must give vent to his ideas. Otherwise, the value of his greatness might be lost to the world. Accidents continue to be frequent, and whether their causes are due to the want of law, or of non-conformity to the provisions of existing law, the fact that they occur so often shows the many hidden perils to which the men who mine the coal are liable. While it may be impossible to absolutely prevent many of the accidents that almost daily happen, still there should be sufficient ingenuity in these days of scientific progression to formulate a system that would, at least, largely reduce their number. No better plan could be devised than the appointment of a competent commission, composed of men who, from research and practical experience, are fully able to properly digest such laws as exist, adding thereto such amendments as will throw greater safe-guards around the lives and limbs of the coal miner, bearing in mind that the safety of the individual is of more importance than the vulgar matter of profit and interest to the operator. Their labor should not be confined either to any one section, but the laws of both the anthracite and bituminous coal-fields should be carefully revised, and so shaped, that their continuous tinkering would be unnecessary, and, when completed, their labor should be enacted into the form and force of law.

In view of the fact that a measure of this character is now pending, and for the general information of all parties concerned, we deemed it expedient to publish the latest revised mining laws of Great Britain, which will be found on page 193, in full. The system of mine regulations in the United Kingdom is the result of many years' deliberation, as well as practical experience, and, doubtless, a perusal of these acts will not only prove interesting, but may be the means of suggesting such amendments to our own laws as will aid materially in perfecting them. The Bureau is under special obligation to Robert Hunt, Esquire, keeper of mining records, London, for a copy of this amended act regulating coal mines.

It is gratifying to observe, after years of laborious effort, the Bureau is commanding and receiving favorable recognition. This is evidenced more particularly from the annually enlarged returns, and the increasing demands for copies of the report. Manufacturers and operators, as a rule, tender their returns with increased promptitude, while the mechanics and workingmen of our State are yearly becoming more and more interested. The demand for copies is far beyond the power of the Bureau to supply, and, in this particular, the number allowed by law to the office should be increased. Of the six thousand copies published, five thousand are assigned to the Senate and House of Representatives for distribution, fifty copies go to the State Library, and fifty to the Executive; leaving but nine hundred copies for the Bureau proper. Out of these, the four bituminous mine inspectors are to be supplied, which leaves but a very limited number at the disposal of the Bureau. When the number of individuals who, in the main, voluntarily respond to our inquiries is taken into consideration, and the fact that the majority, at least, should be entitled to a copy, it needs no argument to show that the law should be so altered as to allow the Bureau to have at least two thousand copies to comply with the demand made upon it. This demand will increase as its completeness advances, all of which, of course, will depend largely upon the energy set forth in its compilation, and the facilities afforded by the law-making power.

The statistics furnished by Lorin Blodget, Esquire, of the textile industries of Philadelphia, are the result of careful inquiry, aided by the police force, under the authority of the mayor of the city. The results of his labor differ materially from those of the United States census, but the extraordinary care taken, Mr. Blodget claims, renders his figures the most reliable.

Many questions relating to the social welfare of the working classes, not touched upon, will command future investigation. Notably among these will be the social advantages and characteristics of workingmen, in the several sections of our State, together with the tenements provided by corporations and other companies for their employés to dwell in. That they are illy provided for in this particular, in many places, is beyond question. Partial arrangements were made for a contemplated investigation of this subject for our present report, but we became convinced that the labor involved was so great that it could not be successfully accomplished in due time, and, as a consequence, it was deferred.

The Bureau is under special obligation to James M. Swank, Esquire, D. R. Jones, Esquire, J. L. Lewis, Esquire, and others, for valuable services rendered.

M. S. HUMPHREYS,
*Chief of Bureau.*

# ANTHRACITE COAL.

*Table showing the number of collieries, number of persons employed production, etc., in the several counties of the Anthracite coal fields of Pennsylvania, compiled from returns made to this office, for the year ended December 31, 1882.*

| COUNTY. | Number of collieries. | Average number of days in operation during the year. | Total number of persons employed. | Amount paid in wages during the year. | Number of Tons of coal produced during the year. |
|---|---|---|---|---|---|
| Carbon, | 11 | 223 | 2,691 | $955,398 15 | 813,699.05 |
| Columbia, | 5 | 227 | 1,479 | 522,490 91 | 550,043.02 |
| Dauphin, | 3 | 270 | 1,655 | 631,580 00 | 539,812.00 |
| Lackawanna, | 52 | 208 | 14,580 | 5,997,419 88 | 5,406,405.10 |
| Luzerne, | 120 | 214 | 31,631 | 13,313,627 72 | 12,680,611.05 |
| Northumberland, | 31 | 231 | 7,253 | 2,876,558 82 | 2,449,340.15 |
| Schuylkill, | 116 | 225 | 21,100 | 8,354,540 17 | 6,782,972 07 |
| Sullivan, | 1 | 240 | 200 | 89,327 00 | 75,900.00 |
| Susquehanna. | | | | | |
| | 339 | 227¼ | 80,589 | $32,740,942 65 | 29,298,784.04 |

NOTE—The production, etc., of the mines located in Susquehanna county were included in the returns of operators in Lackawanna, and are enumerated in the statistics of the latter county. The coal of Sullivan county is classed as semi-anthracite.

# BITUMINOUS COAL AND COKE.

*Table showing the number of collieries, number of persons employed, production, etc., in the several counties of the Bituminous Coal and Coke fields of Pennsylvania, compiled from returns made to this office for the year ended December 31, 1882.*

| COUNTIES. | Number of collieries | Average number of days in operation during the year | Total number of persons employed. | Amount paid in wages during the year. | Number of TONS of coal produced during the year. | Number of coke ovens. | Number of TONS of coke produced during the year. |
|---|---|---|---|---|---|---|---|
| Allegheny, | 90 | 190 | 10,195 | $4 940,430 35 | 4,033,548.10 | 159 | 24,562.09 |
| Armstrong, | 7 | 232 | 258 | 128 957 97 | 119,186.08 | 66 | 12 797.00 |
| Beaver, | 6 | 217 | 216 | 121,782 73 | 91,905.03 | 4 | 766.03 |
| Bedford, | 7 | 244 | 297 | 119,082 78 | 175,506 00 | 88 | 36,033.00 |
| Blair, | 4 | 278 | 330 | 137,749 05 | 143,690.15 | 101 | 60,027.10 |
| Bradford, | 7 | 239 | 688 | 395,871 64 | 390,957.00 | | |
| Butler, | 5 | 227 | 303 | 149,962 19 | 122,881.04 | 50 | 9,000.00 |
| Cambria, | 24 | 264 | 1,463 | 633,281 92 | 880 024.05 | 119 | 39,438.00 |
| Cameron, | 1 | 250 | 65 | 50,000 00 | 33,000.00 | 20 | 5,000.00 |
| Centre, | 5 | 244 | 442 | 203,300 14 | 297,253.00 | 66 | 22,401.00 |
| Clarion, | 13 | 260 | 890 | 368 108 31 | 378 327.00 | 42 | 13,500.00 |
| Clearfield, | 44 | 225 | 4,211 | 1,657,757 54 | 2,872,588.02 | 86 | 20,281.00 |
| Elk, | 6 | 279 | 808 | 363,380 56 | 402,226.16 | | |
| Fayette, | 54 | 186 | 4 642 | 2,263 950 31 | 2,971,126.05 | 5,522 | 1,764,584.18 |
| Huntingdon, | 11 | 248 | 556 | 235,111 60 | 288,398.00 | 200 | 49,232.06 |
| Indiana, | 2 | 300 | 18 | 8 000 00 | 15 900.00 | | |
| Jefferson, | 6 | 229 | 419 | 200,833 80 | 288 430.05 | 31 | 11,891.00 |
| Lawrence, | 8 | 206 | 420 | 169,569 42 | 112,077.15 | 18 | 6,200.00 |
| Lycoming, | 4 | 241 | 517 | 220,368 75 | 209,875.00 | | |
| McKean, | 3 | 209 | 164 | 84,156 28 | 79,924.00 | | |
| Mercer, | 18 | 220 | 1,134 | 485 043 21 | 416,839.12 | | |
| Somerset, | 15 | 202 | 625 | 242 051 01 | 423,697.00 | 6 | |
| Tioga, | 8 | 272 | 2 517 | 1,263,152 88 | 1,157,106 00 | 200 | 64,525.00 |
| Venango, | 4 | 260 | 77 | 28,416 96 | 21.764.15 | | |
| Washington, | 30 | 203 | 2.125 | 956,663 52 | 864,536.10 | 4 | 1.000.00 |
| Westmoreland, | 60 | 232 | 6 756 | 3,348,570 13 | 3 903,340.17 | 3 281 | 1,075.304.11 |
| | 442 | 237 | 40,136 | $18,775,553 05 | 20,694,110.02 | 10,063 | 3,216,543.17 |

# THE IRON AND STEEL INDUSTRIES OF PENNSYLVANIA.*

By JAMES M. SWANK—*Secretary of the American Iron and Steel Association.*

In Andrew Ure's *Dictionary of Arts, Manufactures, and Mines*, we find this comprehensive and eloquent description of iron: "Every person knows the manifold uses of this truly precious metal. It is capable of being cast in molds of any form; of being drawn out into wires of any desired strength or fineness; of being extended into plates or sheets; of being bent in in every direction; of being sharpened, hardened, and softened at pleasure. Iron accommodates itself to all our wants, our desires, and even our caprices; it is equally serviceable to the arts, the sciences, to agriculture, and war; the same ore furnishes the sword, the ploughshare, the scythe, the pruning-hook, the needle, the graver, the spring of a watch or of a carriage, the chisel, the chain, the anchor, the compass, the cannon, and the bomb. It is a medicine of much virtue, and the only metal friendly to the human frame."

A brief account of the manufacture of this metal in the early ages of the world's history, and in later times in those mother countries to which we owe our own familiarity with the iron industry, should not be without interest to the general reader, especially as our recent census has demonstrated that the United States now annually consumes more iron and steel than any other country, and is only excelled in their production by one other country, Great Britain. In the following pages this account will first be presented, after which the growth of the American iron industry, and particularly of the iron industry of Pennsylvania, will be more fully considered.

### The earliest use of Iron.

The oldest written history we have which is generally admitted to be authentic, is contained in the historical and phrophetic books of the Old Testament, and in these we find frequent references to iron and its uses. In the fourth chapter of Genesis, occurs the well-known reference to Tubal Cain, who was an iron-worker. In the book of Job, which is supposed to relate to a patriarchal period between Abraham and Moses, iron and steel are both mentioned. In the story of the wanderings of the children of Israel, who left Egypt about fifteen hundred years before Christ, iron is frequently mentioned. The Egyptians, in the days of Moses, were undoubtedly familiar with the use of iron, and it is extremely probable that they were, at this early period, also engaged in its manufacture, although, as there is an almost total absence of iron ore in Egypt to-day, their manufacturing enterprises may have been located in the territory south of Egypt, and in Arabia. Iron works certainly existed in Ethiopia and Arabia at a very early period. An iron sickle has been found under the feet of one of the sphinxes at Karnak, and a piece of iron was taken in 1837, from an inner joint of the great pyramid at Gizeh. Both of these relics are in the British museum. At Thebes, various articles of iron have been found, which are preserved by the New York Historical society. Iron and steel tools are pictured in the sepulchers at Thebes and Memphis. The Chaldeans and the Assyrians, who were cotemporaries of the Egyptians in the days of Moses, as well as for many centuries afterwards, used and manufactured iron. Iron ornaments, iron armor, and various tools of iron, have been found in the ruins of Nineveh, and iron ornaments have been found in Chaldean ruins. Inscriptions referring to the use of iron, have also been found in Chaldea, and at Nineveh.

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* Contributed in 1883 to the tenth annual report of the Bureau of Industrial Statistics of the Department of Internal Affairs, of the Commonwealth of Pennsylvania.

The Israelites do not appear to have been skilled in the manufacture or manipulation of iron, although Canaan, the land of promise, is described in Deuteronomy, as " a land whose stones are iron," and we know that iron ore is now found in the mountains of Lebanon. The Israelites are represented upon several occasions as depending upon their neighbors for iron, and the skill to fashion it into useful shapes.

The Phœnicians were celebrated as workers in all the metals, which, including iron, they obtained from the countries lying upon the Mediterranean, and from other neighboring countries. One of these neighboring countries was Chalybia, a small district of Armenia, lying south of the Black Sea. The Chalybians were noted in the time of Herodotus for the excellent quality of their iron and steel. The Greeks, and also the Romans, obtained their names for steel from the name of this people, which has also been preserved in our own language in the words " chalybean " and " chalybeate."

The Persians and their northern neighbors, the Medes, made iron many centuries before the Christian era, and so also did the Parthians and other Scythian tribes. The Chinese claim great antiquity for the manufacture of iron and steel in their country. India, with equal show of authority, traces its iron industry and its manufacture of the celebrated Indian steel, or wootz, to the period before the Christian era. In the ruins of Indian temples which were built during that period, large wrought-iron beams have been found; and there is now standing at Delhi a wrought-iron pillar of great size, which is proved by an inscription in Sanscrit to have been forged as early as the beginning of the fourth century after Christ. Damascus, the capital of Syria, was famous for many centuries after the Christian era for its swords, which were made of Indian and Persian steel.

It is clear that Asia, the birth-place of the human race, and the African territory contiguous to, if not including, Egypt, produced iron in the earliest ages of the world's history. Bronze may have been used at as early a period as iron, and for many centuries after its use began it may have superseded iron to a large extent, or, at least, greatly restricted its use; but the common theory that there was a bronze age before there was an iron age is discredited by Old Testament history, by the literature of the ancient Greeks, and by the discoveries of modern antiquarians.

### The early use of Iron in Europe.

The earliest references to the manufacture or use of iron in any European country we find in Grecian fables which had their origin long before the beginning of authentic Grecian history in the eighth century before the Christian era. Other references bring us closer to the Grecian historic age. Homer frequently mentions both iron and steel; Hesiod refers to iron; and the story of Lycurgus requiring the Spartans to use iron as money is well known. Homer, Hesiod, and Lycurgus belong to an uncertain age of Grecian history not later than the eighth century before Christ. After this period the use of iron in Greece, and its manufacture both on the mainland and on some of the Grecian islands, can be definitely traced. Bœotia, on the mainland, and the island of Eubœa were centers of great activity in the manufacture of iron at an early day. The Phœnicians had preceded the Greeks in working the iron ores of Eubœa, and at the beginning of the Christian era its mines were partially exhausted. The iron ores of Elba were worked by the Greeks as early as the beginning of the eighth century before Christ, and it is an interesting fact that these ores are to-day used in some of the blast-furnaces of Pennsylvania. The finest edge tools were made of Chalybian and other steel by the Greeks in the fourth century before Christ, and in the third century the famous "naval monsters," constructed by Archimedes for King Hiero, of Syracuse, were made in part of iron.

It is probable that Spain closely followed Greece among European countries in acquiring a knowledge of the use and manufacture of iron. The Phœnicians founded colonies in the southern parts of France and Spain prior to the sixth century before Christ, and it is exceedingly probable that at this early period they obtained supplies of iron from the latter country. They may, indeed, have introduced the manufacture of iron into Spain. Grecian, Carthaginian, and Roman influence in turn succeeded that of the Phœnicians in Spain between the sixth and second centuries before the Christian era, and under all these rulers the Iberians and Celtiberians of Spain made both iron and steel. The famous forges of Aragon and Catalonia were very active in their production. The Catalan forge, which is still used in its primitive form in the Pyrenees and in the Southern States of our own country, derives its name from Catalonia. The Romans established their authority in Spain in the second century before Christ, and for more than a thousand years afterwards, under frequent political convulsions and changes of dynasties, the iron industry of Spain was the first in the world. To-day, however, whatever prominence its iron industry possesses is derived from the large shipments of Spanish iron ores to Great Britain, Germany, the United States, and other countries.

Roman history dates from the eighth century before Christ, but Etruria, a near neighbor of Rome, and a highly-civilized country, has a still older history. Both countries used iron centuries before the Christian era, and as the island of Elba lay off the Etruscan coast it is probable that the Etruscans made iron from its ores as early as the date of the Grecian use of them above mentioned. About the same time iron was made on the island of Corsica, and from this source Rome would also obtain supplies of iron. In the first and second Punic wars the Romans made use of iron in their attacks both by land and sea. The Roman battering-ram, which was borrowed from the Greeks, had a head of iron, and its beam was strengthened with iron rings. It was used by the Romans in the siege of Syracuse, in the year 212 before Christ. Prior to this time tools of iron and steel were in common use among the Romans. At the beginning of the Christian era iron was in general use throughout the Roman empire, which then embraced almost the whole civilized world.

It is proper to state in this connection that iron and steel were not extensively used as weapons of war until the third or fourth century before the Christian era, although used in a limited way for this purpose before that period. As late as the second century before Christ the helmet and armor of the Roman soldier was made of bronze, but his sword was a cut-and-thrust blade of Spanish steel. At the battle of Cannæ, in the year 216 before Christ, the Romans learned from the Carthaginians, at a very great cost, the value of the Spanish sword. About this time the manufacture of the celebrated Toledo blades were established, and it has been continued until the present day.

The country immediately surrounding Rome did not contain iron ore, but in the northern part of Italy, just south of the Alps, iron was made by the Romans in the first and second centuries before Christ. The Romans also obtained iron at this period from Noricum, a Celtic province, now embraced in Styria and Carinthia, in the Austrian Alps. The iron of this province was celebrated for its excellent qualities, and in the reign of Augustus, the best of swords were made from it for the Roman soldiers. Cotemporaneously with the working of the Norican iron mines, the Quadi, who inhabited the territory now comprised in the province of Moravia, also made iron. In the first century of the Christian era iron was made in Hungary. Iron slag has been discovered in Hungary at a depth of about one foot from the surface of the ground, and in the midst of beautiful vineyards.

Iron is known to have been made in Bohemia in 677, and in Styria in 712. It is probable that iron had been continuously made in these and other Austrian provinces in the period intervening between the dates mentioned and the early operations in Noricum, Moravia, and Hungary above referred to.

France undoubtedly made iron centuries before the Christian era, but from what we know of the present character of its iron resources it was probably not so prominently engaged in the manufacture of this metal as its neighbor, Spain. It is historically established that the Gauls confronted the Romans with iron weapons several hundred years before the Christian era, and Julius Cæsar frequently refers to their use of iron in his wars with them. He says that the Veneti, who inhabited the southern part of Brittany, used iron spikes in fastening the benches of their ships, and that their anchors were attached to iron chains. He also says that there were extensive iron mines in the territory of the Bituriges, whose capital town was Avaricum, the modern Bourges. We do not, however, hear much of an iron industry in France for many centuries afterwards, but it must have been actively maintained, as we know definitely that in the tenth century it was characterized by as much enterprise as that of other countries, and that in the succeeding century, when William the Norman invaded England, many skilled ironworkers were attached to his army.

Iron was made in Belgium in the time of Julius Cæsar and subsequently. In the tenth century the valley of the Meuse was actively engaged in its manufacture, and in the twelfth century we are informed that "iron was made to perfection in the Netherlands."

Germany does not appear to have possessed much knowledge of the use of iron at the beginning of the Christian era, although Polybius states that the Teutons and the Cimbri, from north-western Germany, who invaded Italy and Gaul near the close of the second century before Christ, "were already familiar with iron, and possessed weapons of that metal." Tacitus, writing in the first century after Christ, says that "iron does not abound in Germany, if we may judge from the weapons in general use." We know, however, that in the eighth century iron of great celebrity was made in the district of the river Lahn, in Nassau, by a guild of "forest smiths," and that in the same century iron was made in the Hartz mountains and in Saxony. From this time forward the iron industry of Germany is easily traced, and is found to have been characterized by great skill and enterprise in the immediately succeeding centuries, and to have been widely distributed. One of the most active iron-making districts in Germany in the tenth century was in the Thuringian mountains.

The manufacture of iron in Sweden and Norway probably antedates the time of the vikings in the eighth and ninth centuries of the Christian era, as the remains of their vessels which have been discovered have been found to contain iron. As iron was made in other European countries before this period, there is no reason to doubt that it was also made in Sweden and Norway. The oldest iron mine in Sweden that is known to have been worked in early days does not date further back, however, than 1303, in which year mention is made of it in documents which are still in existence.

This mine is Norberg, in Westmanland, on the southern borders of Dalecarlia. From this period until the present time Sweden has given special attention to the manufacture of iron, and the iron which it has produced has always been conceded to be superior for many purposes to that made by any other country. Norway has never made much iron, although the little that it has made has been so excellent that the name "Norway iron" has been applied commercially to much of the iron made in Sweden.

We do not hear much of the Russian iron industry until in recent times, although great antiquity is claimed for the manufacture of iron in the Sarmatia of the Romans, now Russia in Europe. The Scythians, who inhabited the countries lying north, east, and south of the Caspian sea, would probably carry the art of making iron to the Ural mountains.

Great Britain, which is now and has long been the foremost iron-making country in the world, does not appear to have either used or manufactured much iron at the time of Julius Cæsar's invasion, in the year 55 before Christ. Cæsar says of the Britons, that "they use either brass or iron rings, determined at a certain weight, as their money. Tin is produced in the midland regions; in the maritime, iron; but the quantity of it is small. They employ brass, which is imported." He nowhere mentions the use of iron weapons of war by the Britons. As the Belgæ had passed over to Britain before Cæsar's time, and made settlements upon its coast, it is probable that the small quantity of iron mentioned by him as having been made in the maritime regions was made by them. After the Romans had established their authority in Britain, the manufacture of iron was gradually extended into many districts of the country, and it was prosecuted with more or less activity under the Anglo-Saxons and their successors, but it was not until the eighteenth century that Great Britain became the leading iron-making country. Down to that period, it is probable that Spain first, and Germany afterwards, had occupied this position. The prominence of Great Britain was achieved mainly through the introduction of mineral fuel and more powerful machinery—in these improvements taking precedence of all other countries.

### Early Processes in the Manufacture of Iron.

The methods of manufacturing iron that were employed in the early ages of the world's history, and of which we have any positive knowledge, were exceedingly simple. Wood, in a charred or uncharred state, was the only fuel that was used in smelting iron ore, or in refining iron itself, down to so late a period as the second quarter of the last century. The primitive furnaces, or more properly bloomaries, were sometimes small excavations in the ground, and sometimes small low structures above the ground, and built of clay or stone. The blast was, in some instances, supplied by the winds of heaven, elevated positions being usually selected when this agency was relied upon; in other instances, it was supplied by bellows, or by cylinders of wood or bamboo, having valves and pistons, and worked like a pump. When bellows were used, they were made of goat skins, or of the skins of other small animals, and were worked by the feet or hands. Wilkinson, the Egyptologist, discovered on the walls of a tomb at Thebes, which was built about fifteen centuries before the Christian era. the picture of an Egyption furnace, with two workmen engaged in expelling, with their feet, the air from two pairs of bellows. Homer mentions the use of twenty pairs of bellows in forging the shield of Achilles, and as so many were used, the bellows themselves must have been small. All of the early methods produced wrought-iron, such as the blacksmith uses, but did not usually produce cast-iron, such as can only be used in a foundry. The Indian steel, or wootz, already referred to, was obtained by melting pieces of iron in very small crucibles. containing finely-chopped wood, and this process is still in use in India. The Chalybians produced steel, by a simple process, from magnetic sand.

The manufacture of iron without the use of an artificial blast still exists in Burmah, and this method was employed in Belgium and in England about the time of the Christian era, as is proved by modern discoveries of the remains of ancient iron works in these countries. The same method was in use for smelting lead in Derbyshire, in the seventeenth century, and it was also used for smelting silver ore by the Peruvians, at the time of the Spanish conquest. Goat-skin bellows are in use in India and in the interior of Africa to-day, and blowing-cylinders of wood or bamboo are in use in India, China, Japan, Borneo, and Madagascar, both these means of producing a blast being applied to low furnaces or shallow excavations.

Only small quantities of iron or steel could be produced by such methods as have been referred to, but a method which produced iron in larger quantities, or at least in larger forms, was certainly practiced in India at a very early day, in forging the wrought-iron beams for its temples and the wrought-iron pillar at Delhi. Of this method, we are without any exact knowledge; we are even without a generally-accepted hypothesis concerning it. Metallurgists are unable to understand how these large masses of iron could have been produced by a people who appear not to have possessed any of the mechanical appliances for their manufacture that are now necessary to the production of similar articles.

Bellows made of ox-hides, and of much larger size than the primitive goat-skin bellows, were used by the Greeks and Romans as early as the third century before Christ, and probably much earlier. In the fourth century of the Christian era, the Romans introduced leather bellows into Gaul. With the introduction of larger bellows by the Greeks and Romans, larger furnaces or bloomaries became possible, and with both these improvements iron could be produced in larger quantities than had previously been possible. The Greeks and Romans had a furnace very similar to the wolf furnace, which will presently be referred to, but the Catalan forge, or some other forge of substantially the same form and capabilities, became the common mechanical agency in producing wrought-iron. Cast-iron was still not regularly produced, nor was it desired, for the art of casting iron in molds was not practiced, and there is no certainty that it had yet been discovered. The island of Corsica gave the name of Corsican forge to a modification of the Catalan forge, and this forge was lately in use in Corsica. Both of these forges, and others whose names have not come down to us, differed in no essential particular from an ordinary blacksmith's fire, and the leather bellows which supplied them with their blast, were also similar to our ordinary blacksmith's bellows. Iron ore, more or less pulverized, was placed directly on the hearths of these forges.

About the beginning of the eighth century, the iron industry appears to have been more active throughout Europe than at any previous period, and at this time we hear of the wolf furnace, or *stückofen*, being in general use in Germany, Austria, and other Continental countries. Percy says that the *stückofen* "is only a Catalan furnace extended upwards in the form of a quadrangular or circular shaft. The Germans call it *stück* or *wolf's ofen*, because the large metallic mass which is extracted from the bottom, is termed *stück* or *wolf*. These furnaces or bloomaries, of which there yet remain a few on the Continent, were about ten feet high. They, produced wrought-iron and steel in the form of a bloom or salamander although, as Percy informs us, cast-iron was also generally, if not always, produced in the *stückofen*, "to the annoyance of the smelter." The bloom of iron was divided by hatchets and wedges, and afterwards refined under the hammer. At what period the tilt-hammer and water-power were brought to the aid of the early European ironworker is not known.

The *stückofen* was blown with two or more bellows, to produce a continuous as well as a powerful blast. It did not supersede the Catalan forge and its modifications, but it greatly increased the production of iron and steel. It rendered necessary the use of a refinery fire, which did not differ materially from the Catalan forge itself.

The osmund furnace is the name given to a form of the *stückofen* which was once in general use in the Scandinavian parts of Europe, is still used in Finland, and was not abandoned in Sweden until the last century. It derived its name from the Swedish word *osmund*, "which was applied to the bloom produced in this kind of furnace." Excellent iron, and also steel, were produced in this furnace, but in smaller quantities than in the *stückofen*. Professor Rogers tells us that in the thirteenth and fourteenth centuries England imported osmund iron and steel. Among the Germans the *stückofen* was also called *bauernofen*, because it was sometimes used by the farmers when they were not engaged in cultivating the soil.

Gradually the blast furnace was evolved from the *stückofen*, the credit for this improvement probably belonging to Germany. Percy says that "by increasing the dimensions of the *stückofen*, especially its height, the conditions favorable to the formation of cast-iron are obtained." At first this enlarged furnace was used to produce both wrought and cast-iron. When used for the former purpose it was called a *stückofen*, but when used for the latter purpose it was called a *blauofen*. More charcoal was required to produce cast-iron than wrought-iron. When the furnace came to be used solely for the production of cast-iron, the name *blauofen* was continued, but subsequently the name *flussofen* was applied in Germany to the same furnace. The *flussofen* was in use on the Continent, and probably in England, as early as the fourteenth century. With the blast furnace were associated the refinery and the tilt-hammer, with which all wrought-iron was produced down to the latter part of the eighteenth century, when the rolling-mill and the puddling-furnace were perfected in England by Henry Cort. As already stated, wood was the only fuel used in the production of iron down to the early part of the last century, and it may here be circumstantially stated that the first permanently successful use of mineral coal in the blast furnace, was by Abraham Darby, of Shropshire, England, at his furnace at Coalbrookdale, in 1735. This coal was coked.

While the blast furnace was being evolved from the wolf furnace, and perfected, methods for increasing the blast were also being introduced. At first larger leather bellows were used, and next we hear of the invention of the wooden bellows, or tubs, by Hans Lobsinger, a German, in 1550. In 1760 John Smeaton, an Englishman, invented the cylindrical cast-iron bellows; and nine years later the steam-engine, which had, in the meantime, been perfected by James Watt, a Scotchman, was used in supplying the power to Smeaton's cylinders. Down to this period water-power was exclusively used in operating the leather and wooden bellows. Neither of these last-named bellows was, however, at once abandoned, even in England, and on the Continent the tubs may still be found in use. These tubs have been used to produce the blast for furnaces and forges in Pennsylvania within the recollection of many living witnesses.

In 1640 there was introduced in Italy a curious and most ingenious invention called the *trompe*, or water-blast, which was applied to the forges of that country and, in time, to other European forges, although its use never became general. This water-blast was introduced into the United States by some of our pioneer forgemen, and as late as 1858 its use was almost universal in the Southern States in connection with the primitive Catalan forges which were then so common in that section. It is now generally abandoned in Europe and in the United States, as have been the forges which called it into existence, but it may still be found in use in Virginia, Tennessee, and North Carolina.

For about two hundred years previous to the perfection of the rolling-mill by Henry Cort, at the close of the last century, there had existed a machine for slitting flattened bars of iron into strips called nail-rods. This was the slitting-mill. The origin of the slitting-mill, like that of the rolling-mill itself, is in doubt, although its invention is credited by an old historian to Godfrey Bochs, of Liège, Belgium, who set up at Dartford, in England, in 1590, " the first iron mill for slitting bars." Slitting-mills supplied nail-rods to the people of the United States down to the early part of the present century, but mills of this character have now been wholly abandoned in our own country and probably in all other countries.

All the steel that was made in Europe down to a few hundred years ago was made in the Catalan forge, or in the *stückofen* directly from the ore, or in a refinery from pig iron. The conversion of bar iron into blister steel by the cementation process, an invention which doubtless originated in Germany, was next generally introduced, and about the middle of the last century Benjamin Huntsman, an English clock-maker, invented the process of manufacturing steel in crucibles. The more important inventions of the Bessemer process and the open-hearth process belong to our own time. It is worthy of notice that, with the exception of the blast furnace, all the important inventions connected with the manufacture of iron and steel, and which have so greatly increased their production and stimulated their use, are of modern origin.

### The Manufacture of Iron in the American Colonies.

The aboriginal inhabitants of America do not appear to have been familiar with the use or manufacture of iron. The inhabitants of Mexico and Peru were unacquainted with the use of iron at the time of the Spanish conquest, copper serving them as a substitute. The Indians who inhabited the country now comprised within the limits of the United States certainly had no knowledge of iron when the Spaniards, the English, the Dutch, and other Europeans first landed on the Atlantic coast. It is a curious and an interesting fact that the iron industry has scarcely an existence to-day in any section of North or South America except in the United States, and it is a further striking fact that in our own country this industry has received its principal development in the Northern States. Whittier sings, although his theme is far removed from that which we are considering:

There's iron in our Northern winds;
Our pines are trees of healing.

The poet's words suggest a truth of still wider application. It is only in northern latitudes in both hemispheres, and only in the central part of the north temperate zone, that iron is made in large or even in noticeable quantities. This is not wholly due to geological reasons; climate and race have had much to do with stimulating the metallurgical as well as all other industries in the belt of the earth's surface alluded to, and which may well be called the iron-making belt.

The first mention of iron ore in connection with European settlements within the limits of the United States occurs in Thomas Hariot's history of the expedition fitted out by Sir Walter Raleigh and commanded by Ralph Lane, which made, in 1585, on Roanoke Island, in North Carolina, the first attempt to plant an English colony on the Atlantic coast. This expedition discovered iron ore on the mainland, "in two places of the country specially," as stated by Hariot, but as the colonists soon quarreled with the Indians, and returned to England, the ore was allowed to remain in the ground undisturbed.

In 1607, the first permanent English colony in the New World was founded at Jamestown, in Virginia, and in 1608, the company's ship commanded by Captain Christopher Newport, sailed from Jamestown for England, loaded with iron ore, and other native products of the country. This ore was smelted in England, and produced iron of good quality. It was undoubtedly the first iron made by Europeans from American ore. In 1619, the founders of Jamestown sent to Virginia a number of persons "to set up three iron works" in the colony. The enterprise was undertaken in that year on Falling creek, a tributary of the James river, which it enters from the south, about sixty-six miles above Jamestown, and about seven miles below Richmond. In 1620, the works had been so far completed, that "proof of good iron ore" was made, but from various causes further progress was delayed. In 1622, when the works had probably been entirely completed, the colony was visited by an Indian massacre, the works were destroyed, and the workmen were killed. This disastrous pioneer enterprise probably embraced a blast furnace and a refinery forge. Almost a hundred years elapsed before another attempt was made to make iron in Virginia.

Soon after the Pilgrims and Puritans settled in Massachusetts, iron ore was found in various places, probably bog ore. In 1642, specimens of bog ore from Lynn were taken to London, and in the same year a company was formed to establish iron works at Lynn. In 1645, a blast furnace had been erected at Lynn, and in 1648, a refinery forge had been added. A small iron pot, which was still in existence in 1844, was the first article cast at the furnace. The works at Lynn continued in operation for many years, the furnace making castings and "sowe iron," and the refinery converting the latter into bar iron. These iron works were the first that were successfully established in America.

Other furnaces and forges were erected in Eastern Massachusetts, and in Rhode Island and Connecticut, soon after the establishment of the works at Lynn—bog ore, obtained from ponds and swamps, being used in most instances. There were, however, many more forges than furnaces, the former being used mainly as bloomaries, for the direct conversion of iron ore into bar iron. The furnaces were principally employed in producing castings, and for this reason, were as frequently called foundries as furnaces. For more than a hundred years after its settlement in 1620, Massachusetts was the chief seat of the iron manufacture on this continent, the industry being confined to its eastern counties. During the last century, iron works, principally bloomaries, were established in the remaining sections of New England, Vermont being very prominent after the Revolution, in the manufacture in bloomaries of a fine quality of bar iron from its magnetic and other ores. In the same century the iron industry was extended into Western Massachusetts, and into the Salisbury district of Connecticut, where superior brown hematite ore had been discovered.

With the extension of the manufacture of iron throughout New England in the last century, its reproduction in the form of agricultural implements, mill machinery, anchors, edge tools, stoves, pots and kettles, nails, tacks, and other articles largely occupied the attention of New England people. The manufacture of wrought-iron nails, in chimney corners with small forges, was one of the leading household industries of New England until long after the close of the Revolution, cut nails not coming into general use until after the second war with great Britain. The prominence of New England in changing crude iron into useful forms has not yet been lost, but before the Revolution this section of our country had lost its leadership among the colonies in the production of crude iron itself.

New Jersey closely followed Massachusetts, Rhode Island, and Connecticut in the manufacture of iron. Its first iron enterprise, embracing a blast furnace and a forge, was situated in Shrewsbury township, in Monmouth county, and was undertaken about 1674. These works were in operation as early as 1676, and we hear of their being continued in 1682, and again in 1685. They used bog ore. Henry Leonard, who had been prominently connected with iron works in New England, is supposed to have superintended the construction of the Shrewsbury works; he was certainly identified with them about 1674. Shrewsbury township was settled by emigrants from Connecticut soon after 1664, when New Jersey was surrendered to the English by the Dutch.

About the time of the establishment of the Shrewsbury works, the rich deposits of magnetic iron ore in Northern New Jersey were discovered, and about 1710, a bloomary forge was erected at Whippany, in Morris county. This forge was speedily followed by many others, and these by a few furnaces, and other iron enterprises. At the beginning of the Revolution, New Jersey was a large producer of iron, and much reliance was placed upon its iron resources throughout the subsequent struggle. No State in the Union has ever devoted so much attention to the manufacture of iron in bloomaries as New Jersey. In 1802 the State had one hundred and fifty forges, nearly all of which were bloomaries, but their total annual capacity was only three thousand tons of bar iron.

New York had certainly made no iron as late as 1734, but between this date and 1740 its first iron works of which we have authentic information were established on Ancram creek, in Columbia county, by Philip Livingston, who was afterwards a signer of the Declaration of Independence, and who died and was buried at York, Pennsylvania, in 1778, while serving as a delegate to the Continental Congress. They embraced a blast furnace and a refinery. In 1756 they were said to be the only iron works in the province that were then in operation, although others had been undertaken, but were then silent. Of these other enterprises history mentions a few furnaces and several bloomaries in various places; also "a plating-forge with a tilt-hammer" at Wawayanda, in Orange county, which had been built about 1745, and was in 1750 "the only mill of that kind in the province." One of the furnaces existing in 1756 had been erected in 1751 at the outlet of Sterling pond, in Orange county, to smelt the magnetic ores of Sterling mountain. In the absence of wagon roads the charcoal for this furnace was at first carried on the backs of horses. In 1752 a forge was built near this furnace, at which the first anchor made in New York was made in 1753. Other iron enterprises in Orange county soon followed those mentioned. During the last century this county was the chief seat of the manufacture of iron in New York. The celebrated Champlain district was not developed until after 1800.

In 1684, just two years after the landing of William Penn at Philadelphia, an "iron hill" is mentioned as being situated eight miles from New Castle, in New Castle county, then in Pennsylvania, but now in Delaware. Iron ore was found in this locality, but iron was not made here until many years afterwards. Between 1717 and 1726 Sir William Keith, then Governor of Penn's province, established iron works on Christiana creek, in New Castle county, which seem to have had but a short life. Soon after 1730 we hear of bloomaries on Christiana creek and on White Clay creek, and as early as 1746 there was a blast furnace near the "iron hill." In Sussex county, in the southern part of Delaware, iron was made from bog ore before the Revolution. In 1787 or 1788 a rolling and slitting-mill was erected near Wilmington.

The manufacture of iron in Pennsylvania was established in 1716. This fact is here simply referred to because of its relation to the establishment of early iron enterprises in other colonies.

About 1715 the iron industry was revived in Virginia by Colonel Alexander Spotswood and others. Colonel Spotswood was Governor of the colony from 1710 to 1723, and in the first year of his incumbency of the office he called attention to the value of the mines of iron ore which had recently been discovered "at the falls of the James river." This ore had been tried and found to be "extraordinary rich and good." These mines do not appear, however, to have been opened at this time. In 1714 we find at the head of the Rappahannock river a settlement of German Protestants who had come over "in hopes to find out mines," and it is probable that they were employed at the first of Colonel Spotswood's iron enterprises, which was a blast furnace, built of stone, and situated in Spottsylvania county, about twenty miles south-west of Fredericksburg. This furnace seems to have been in operation in 1715. Another furnace in which Colonel Spotswood was interested was situated about twenty-five miles south-west of Fredericksburg. This furnace was built of brick, and was blown by "two mighty pair of bellows." The limestone used at this furnace was brought from England as ballast. Both of these furnaces were substantial structures and well equipped. Their water-wheels were respectively twenty-six and twenty feet in diameter. The pig iron made at these furnaces was hauled to the Rappahannock, whence it was at first taken by vessel to forges in Cecil county, Maryland, where it was converted into bar iron. As late as 1732 there was no forge in Virginia. In this year there were three furnaces in the colony—the two above mentioned and another on the north side of the Rappahannock, in King George county. At the same time there was an air furnace at Massaponux, on the Rappahannock, five miles above Fredericksburg, which had recently been erected by Colonel Spotswood, and at which he was prepared to "furnish the whole country with all sorts of cast iron, as cheap and as good as ever came from England." Augustine Washington, the father of George Washington, was interested in the furnace in King George county, which was called Accokeek, and was owned by the Principio Company. It was built in 1725. Mr. Washington owned a one twelfth interest in all the property of the Principio Company, of which we shall speak hereafter. The pig iron from this furnace was taken to the company's forges in Maryland.

The first iron works in Maryland were erected in Cecil county about 1715, and consisted of a forge at Northeast and a furnace and forge at Principio. The Principio Company, which built the works at Principio, afterwards owned, also, the forge at Northeast, Accokeek furnace in Virginia, and Kingsbury and Lancashire furnaces in Maryland. Accokeek furnace was abandoned in 1753, but the other properties were actively operated down to the Revolution. This company was the most extensive and successful manufacturer of iron in our colonial history. It was a large exporter of pig-iron to England. In 1743, Lawrence Washington, an elder half-brother of George Washington, upon the death of his father, succeeded to his interest, one twelfth, in the company's possessions, and at his own death, in 1752, this interest passed first into the hands of his daughter Sarah, and soon afterwards into the hands of his brother Augustine. The company, being mostly composed of royalists, was broken in pieces by the Revolutionary struggle, the Accokeek lands falling to "a certain Mr. Washington," in a division of the property, in 1780. Iron is still made at Northeast and Principio.

Between 1723 and 1730 a furnace was built at the mouth of Gwynn's Falls, and a forge at Jones' Falls, in Maryland, by the Baltimore Company. Other iron enterprises in Maryland soon followed those mentioned.

The iron industry was commenced in North Carolina as early as 1728, when a small quantity of pig-iron was exported to England from this colony. In 1734 a small quantity of bar-iron was also exported. Before the Revolution, several iron works were established in North Carolina, and immediately after its close the State was very active in the manufacture of iron, principally in bloomaries. Its iron industry has now almost entirely disappeared. It is a curious fact, illustrative of the lapsed enterprise of North Carolina, in the manufacture of iron, that it partly supplied New York with hoes before the Revolution, as did also Virginia.

South Carolina does not appear to have made iron until 1773, when iron works were erected by Mr. Buffington, in the north-western part of the colony. These works were, however, destroyed by the Tories during the Revolution. Several furnaces and forges were erected in South Carolina after the peace, the first of which were the Era and Etna furnaces and forges, in York county, which were built. respectively, in 1787 and 1788, and were extensive enterprises in their day. Down to the beginning of the civil war, this State continued to make small quantities of iron, but it has now no iron industry whatever, although still possessing iron ore and forests of timber which could be used to smelt it.

Georgia has no colonial iron history, and we do not hear of any iron being manufactured within its borders until 1810, when there was a bloomary in Warren county, a forge in Elbert county, and a nailery in Chatham county. These enterprises were on or near the Atlantic coast. Since 1810 the iron industry of Georgia has been slowly extended.

### The Manufacture of Iron in Pennsylvania before the Revolution.

Having thus glanced at the beginning of the iron industry in the thirteen colonies, we now pass to the special consideration of the iron and steel industries of Pennsylvania, including a review of their present relation to the iron and steel industries of our whole country.

There is no evidence that the Swedish and Dutch settlers on the Delaware made any attempt to manufacture iron. In the *Journal of a Voyage to New York*, in 1679 and 1680, by Jasper Dankers and Peter Sluyter, who then visited the Swedish and other settlements on the Delaware, it is expressly declared that iron ore had not been seen by them on Tinicum island, or elsewhere in the neighborhood. Jasper Dankers says: "As to there being a mine of iron ore upon it, I have not seen any upon that island, or elsewhere; and if it were so, it is of no great importance, for such mines are so common in this country that little account is made of them."

In 1682, two years after this account was written, William Penn sailed up the Delaware, and in the following year he mentions the existence of "mineral of copper and iron in divers places" in his province. In 1685, speaking of "things that we have in prospect for staples of trade," he says: "I might add iron, (perhaps copper, too,) for there is much mine, and it will be granted to us that we want no wood." In 1702 he urges James Logan, the secretary of the province, to make an effort to secure the establishment of iron works by certain persons who are referred to, to which appeal Logan replies that no "considerable vein" of iron ore had yet been found by them.

Notwithstanding the fact that no "considerable vein" had been found in Pennsylvania in 1702, we find mention made in a metrical composition, by Richard Frame, published in 1692, of a successful experiment in the manufacture of iron having been made in the province as early as that year. Frame says:

> A certain place here is, where some begun
> To try some Mettle, and have made it run,
> Wherein was Iron absolutely found,
> At once was known about some Forty Pound.

The "certain place" mentioned in these otherwise very valuable lines, is unfortunately very uncertain. We suspect that it was at or near the "iron hill" in New Castle county, Delaware, to which we have already referred. The experiment would doubtless be made in a bloomary or ordinary blacksmith's fire.

In 1698 Gabriel Thomas published at London an account of Pennsylvania and West New Jersey, in which, alluding to Pennsylvania, he says: "There is likewise ironstone or ore, lately found, which far exceeds that in England, being richer and less drossy. Some preparations have been made to carry on an iron work." But neither these preparations, nor the enterprise alluded to by Richard Frame, led to satisfactory results.

The first successful attempt that was made to establish iron works in Pennsylvania, occurred in 1716, and is briefly described in one of Jonathan Dickinson's letters, written in 1717, and quoted by Mrs. James in her *Memorial of Thomas Potts, Junior:* "This last summer, one Thomas Rutter, a smith, who lives not far from Germantown, hath removed further up in the country, and of his own strength has set upon making iron. Such it proves to be, as is highly set by by all the smiths here, who say that the best of Sweed's iron doth not exceed it. And we have the accounts of others that are going on with iron works." Rutter's enterprise was a bloomary forge, located on Manatawny creek, in Berks county, about three miles above Pottstown.

The following obituary notice in the *Pennsylvania Gazette*, published at Philadelphia, and dated March 5 to March 13, 1729–30, is conclusive proof of the priority of Thomas Rutter's enterprise: "Philadelphia, March 13. On Sunday night last died here Thomas Rutter, senior, of a short illness. He was the first that erected an iron work in Pennsylvania." In his will he is styled a blacksmith. Dr. Benjamin Rush, a signer of the Declaration of Independence, was a great-grandson of Thomas Rutter. Rutter, is said by Mrs. James, to have been an English Quaker. She gives a *verbatim* copy of the original patent of William Penn to Thomas Rutter for three hundred acres of land "on Manahatawny creek," dated February 12, 1714–15.

The second iron enterprise in Pennsylvania was Coventry forge, on French creek, in the northern part of Chester county, which was built by Samuel Nutt, also an English Quaker, about 1717. This forge was certainly in existence before 1720, as in that year a letter, which we have seen, was written by Nutt, in which he announced his intention to erect another forge that fall. Like Rutter's Manatawny enterprise, Nutt's forge was at first operated as a bloomary. In 1719 some of the iron from these forges was sent over to England, where Dickinson tells us it was "greatly approved."

The next iron enterprise in Pennsylvania was probably Colebrookdale furnace, which was erected about 1720, by a company of which Thomas Rutter was the principal member. It was located on Ironstone creek, in Colebrookdale township, in Berks county, about eight miles north of Pottstown, three fourths of a mile west of Boyertown, and about two hundred yards from the Colebrookdale railroad. Plenty of cinder marks the exact site to-day. A large grist and saw-mill stands about one hundred feet distant. This furnace supplied the Manatawny forge with pig-iron, and in course of time other forges. In 1731 pig-iron sold at Colebrookdale furnace "in large quantities" at £5 10s. per ton, Pennsylvania currency, a pound being equal to $2 66⅔. A stove-plate cast at this furnace in 1763, was exhibited at the Philadelphia Exhibition of 1876. The furnace was located in the heart of one of the richest deposits of magnetic iron ore in the United States. After being neglected for a long time, this deposit is now the center of great mining activity. In 1733 Colebrookdale furnace was torn down and rebuilt. We hear of it for the last time in 1793.

Durham furnace, on the Delaware river, in the extreme northern part of Bucks county, was built in 1727, by a company of fourteen persons, of which James Logan, (Penn's secretary,) was a member. Its first blast took place in the spring of 1728, and in November of that year James Logan shipped three tons of Durham pig-iron to England. At the Philadelphia Exhibition of 1876, the keystone of Durham furnace, bearing date "1727," was an object of interest. In 1770, there were two furnaces and two forges at Durham. Much of the iron made at Durham was taken to Philadelphia, in boats fashioned somewhat like an Indian canoe, and first built at Durham, hence the term afterwards in common use, "Durham boats."

In 1728 James Logan wrote that "there are four furnaces in blast in the colony." Colebrookdale and Durham were certainly two of these, but the names of the others are in doubt. It is probable that another was Reading furnace, on French creek, in Chester county, which we think was built by Samuel Nutt, soon after he built Coventry forge. A second Reading furnace was built by Samuel Nutt and William Branson about 1736. The fourth furnace referred to by Logan may have been one of Sir William Keith's enterprises, in New Castle county, already referred to. The iron industry of Pennsylvania may be fairly said to have been established on a firm foundation at this period. In 1728–29 the colony exported two hundred and seventy-four tons of pig-iron to the mother country.

Samuel Nutt died in 1737. In his will he made provision for the erection of a new furnace by his wife, on the south branch of French creek, which was commenced in 1737 and probably finished in 1738. This furnace was called Warwick. In 1740 its management fell into the hands of Robert Grace, who had married into the Nutt family, and was a friend of Benjamin Franklin. In 1742 Franklin invented his celebrated stove, the model of which he presented to his friend Grace, who afterwards cast many stoves at the furnace.

Warwick furnace continued in operation during a part of almost every year from its erection in 1738 down to 1867, when its last blast came to an end and the furnace was abandoned. During the Revolution it was very active in casting cannon for the Continental army, some of which were buried upon the approach of the British in 1777, and have only recently been recovered, having lain undisturbed for a hundred years. Warwick and the second Reading furnace were famous furnaces in the last century. Reading furnace was in operation in 1773, but in 1783 the German traveler, Schœpf, says that "it is at present fallen into decay."

The erection of other furnaces and forges proceeded with great rapidity in the Schuylkill valley and in other eastern portions of Pennsylvania after Rutter and other pioneers had shown the way. Most of these enterprises prior to the Revolution were in Chester, Montgomery, Berks, and Lancaster counties. The present county of Delaware, then embraced in Chester county, had a forge on Crum creek, which was built about 1742 by John Crosby and Peter Dicks. It made bar iron from pig iron brought from the Schuylkill furnaces. As early as the year just named, John Taylor built a forge on Chester creek, in Delaware county, which he called Sarum iron works, and to which he added a rolling and slitting-mill in 1746. This was the first rolling and slitting-mill in Pennsylvania.

In 1750 there was a "plating-forge with a tilt-hammer" in Byberry township, in the north-eastern part of Philadelphia county, which was the only one in the province, and was owned by John Hall, but was not in use in that year. In the same year there were two steel furnaces in Philadelphia, one of which, Stephen Paschall's, was built in 1747, and stood on a lot on the north-west corner of Eighth and Walnut streets; the other was owned by William Branson, and was located near where Thomas Penn "first lived at the upper end of Chestnut street." These furnaces produced blister steel. There is no record of any other steel furnaces in the province in 1750, although, about this time, and probably earlier, William Branson and others associated with him established on French creek the Vincent steel works, also for the production of blister steel. Israel Acrelius, the historian of New Sweden, says that the Vincent works, which he describes, were not in operation at the time of his visit to them between 1750 and 1756. As late as 1780 these works were still in existence.

In 1751 there was a forge for the conversion of pig-iron into bar-iron at the mouth of East Valley creek, a small tributary of the Schuylkill river. It was situated on the Chester county side of the creek, and at the time named was advertised for sale as the property of Daniel Walker, Stephen Evans, and Joseph Williams. It was then called Mount Joy forge, and this name it retained for some years afterwards, when it came to be known as Valley Forge. The pig-iron used at Valley Forge was hauled from Warwick furnace. In September, 1777, the forge was burned by the British, and in December of the same year the American army under Washington was intrenched on the Montgomery county side of Valley creek, opposite Valley Forge. General Wastington's headquarters were established at the substantial stone-house of Isaac Potts, also on the Montgomery county side of Valley creek. This house is still standing. After the Revolution another

Valley forge was built on the Montgomery county side of Valley creek; it was in ruins in 1816. Such is a brief account of a small iron enterprise around the name of which cluster the most sacred memories of our Revolutionary struggle.

The early Pennsylvania iron works were in the main judiciously located, and were usually substantial and not ephemeral enterprises, as will be seen from the following additional illustrations. Charming forge, on Tulpehocken creek, two miles from Womelsdorf, in Berks county, was built in 1749, probably by Pennsylvania Germans, as we find that in 1754 it was styled *Tulpehocken Eisen Hammer*. This forge is still in operation. About 1740 William Bird built a forge on Hay creek, near its entrance into the Schuylkill, where the iron-making town of Birdsboro' now stands. In 1759 he built Hopewell furnace, on French creek, in Union township, Berks county, which is still in operation and still using charcoal. Mary Ann furnace, in Long Swamp township, Berks county, was in existence as early as 1762, when it was owned by George Ross and George Ege. This furnace was in blast until 1869. Oley furnace, on Manatawny creek, about eleven miles northeast of Reading, was built in 1770 by Daniel Udree, a Pennsylvania German, and is still in operation. In 1780 a forge of the same name was built on the same stream by Mr. Udree. It was in operation until 1856. Cornwall furnace, located within the limits of the now celebrated Cornwall ore hills, on Furnace creek, in Lebanon county, a few miles south of Lebanon, was built in 1742 by Peter Grubb, and is still in operation. It is the oldest active charcoal furnace in the United States, and has always used charcoal. Elizabeth furnace, near Brickersville, in Lancaster county, on Middle creek, a branch of Conestoga creek, was built about 1750 by John Huber, a Pennsylvania German. In 1757 Huber sold it to Henry William Stiegel and his partners, who built a new and larger furnace, which continued in operation until 1856, when it was abandoned for want of wood. Martic forge, on Pequea creek, near the present village of Colemanville, in Lancaster county, was built in 1755, and is still in operation. Prior to 1769 a furnace was built at Martic by the owners of the forge, and in that year the furnace and forge were offered for sale by the sheriff. The sheriff's advertisement, which we give below, indicates very correctly the extent and character of a Pennsylvania iron enterprise before the Revolution:

"By virtue of a writ to me directed, will be exposed to sale, by public vendue, on the 30th day of January inst., at 10 o'clock in the morning, at Martick Furnace, in Lancaster county, the said furnace and forge, together with upwards of 3400 acres of land, thereunto belonging. The improvements at both furnace and forge are very good, viz.: At the Furnace, a good dwelling-house, stores, and compting-house, a large coal-house, with eight dwelling-houses for the labourers, a good grist-mill, Smith's and Carpenter's shops, 6 good log stables, with 4 bays for hay, a number of pot patterns, and some flasks for ditto, stove moulds, &c., &c.; a good mine bank, abounding with plenty of ore, so convenient that one team can haul three loads a day; about 15 acres of good watered meadow, and as much adjoining may be made: The Forge is about 4 miles distant, now in good order, with four fires, two hammers, and very good wooden bellows, a dwelling-house, store, and compting-house, with six dwelling-houses for the labourers, two very good coal-houses. large enough to contain six months' stock, three stables, Smith's and Carpenter's shops, two acres of meadow made, and about 1500 cords of wood, cut in the woods at both places; there is plenty of water at said works in the driest seasons, and they are situated in a plentiful part of the country, where they can be supplied with necessaries on the lowest terms: And to be sold the same day, a very good plantation, containing 200 acres of patent land, clear of quitrent, adjoining the lands of Benjamin Ashleman, the Widow Haiman, and others, in Conestogo township. Also two slaves, one a Mulattoe man, a good forge man, the other a Negro man, and three teams of horses, with waggons and gears, &c. All late the property of Thomas Smith, James Wallace, and James Fulton; seized and taken in execution, and to be sold by

JAMES WEBB, *Sheriff*."

The iron industry of Pennsylvania crossed the Susquehanna at a very early period. There was a bloomary in York county in 1756, owned by Peter Dicks, who had but recently discovered "the mine." Spring forge, in the same county, was built in 1770, was still in operation in 1849, and was abandoned about 1850. Soon after 1762 a furnace and forge were built at Boiling Springs, in Cumberland county, forming the nucleus of the Carlisle iron works, which are still in operation. On a tax-list at Carlisle Robert Thornburg & Co. appear in 1767 as the owners of a forge to which twelve hundred acres of land were attached. A forge is supposed to have been built at Mount Holly in 1765. Pine Grove furnace, in the same county, was built about 1770. A forge was attached to this furnace. The furnace and forge are still in operation. No other iron works west of the Susquehanna are known to have been established previous to the Revolution. About 1777 William Denning, an artificer of the Revolutionary army, had a forge in active operation at Middlesex, in Cumberland county, at which he manufactured wrought-iron cannon.

The manufacture of iron was not fairly commenced in Pennsylvania until 1716, but in the sixty years which intervened before the Revolutionary struggle probably sixty blast furnaces and forges were built, a rate of progress which was not attained by any other colony in the same period. Acrelius said in 1756: "Pennsylvania, in regard to its iron works, is the most advanced of all the American colonies." Many of these enterprises were upon a scale that would have done credit to a much later period of the American iron industry. Cornwall and Warwick furnaces were each thirty-two feet high, twenty-one and one half feet square at the base, and eleven feet square at the top. Warwick was at first nine feet wide at the boshes, but was afterwards reduced to seven and one half feet. The forges were usually those in which pig-iron was refined into bar-iron, "in the Walloon style," as stated by Acrelius. There were few ore bloomaries, and nearly all of these were built at an early day. The smaller furnaces yielded only from one and one half to two tons of cast-iron daily, but the larger ones yielded from three to four tons. The Reading and Warwick furnaces, when in blast, each made from twenty-five to thirty tons of iron a week. Schœpf says that Warwick often made forty tons a week. The furnaces were used to produce both pig-iron and castings, the latter consisting of stoves, pots, kettles, andirons, and similar articles. During the Revolution, Warwick, Reading, Cornwall, and perhaps other Pennsylvania furnaces, cast cannon, shot, and shells for the Continental army. Of the capacity of the forges, Acrelius says that "one forge, with three hearths, in good condition, and well attended to, is expected to give two tons a week." The same author says that "for four months in summer, when the heat is most oppressive, all labor is suspended at the furnaces and forges." All of the works were operated by water-power. At first, large leather bellows were used to blow both the furnaces and the forges, but afterwards wooden cylinders, or tubs, were introduced. Reading, Warwick, and Cornwall furnaces—three of the best furnaces of the last century—retained their long leather bellows for many years. The Cornwall bellows was twenty feet seven inches long, five feet ten inches wide across the breech, and fourteen inches in diameter at the insertion of the nozzle. Only one tuyere was used. The fuel used was exclusively charcoal, and the blast was always cold. About four hundred bushels of charcoal were required to produce, from the ore, a ton of hammered bar-iron.

The early ironmasters of Pennsylvania appear to have been very evenly distributed among the leading nationalities represented by the colonists who followed William Penn's landing at Philadelphia, in 1682. The pioneers—Rutter and Nutt—were Englishmen, and so, also, were William Branson and William Bird. Peter Grubb was the son of an Englishman. Daniel Udree, John Huber, William Stiegel, and many others, were Germans. Robert Coleman was a Scotch-Irishman. James Old was a Welshman, and Cyrus Jacobs was of Welsh extraction. George Ege and Michael Ege were Hollanders. The workmen represented all nationalities, and included many negroes, both free and slave. Some of the white workmen were "redemptioners," that is, persons who, unable to pay their passage across the Atlantic, were sold for a term of years to the highest bidder.

The iron industry of Pennsylvania before the Revolution, in common with that of other colonies, was greatly hampered by the restrictive measures of the mother country. In 1750, it prohibited the erection, in the colonies, after that date, of any "mill or other engine for slitting or rolling of iron, or any plating forge to work with a tilt-hammer, or any furnace for making steel," "every such mill, engine, forge, or furnace" erected in violation of this prohibition being declared to be "a common nuisance," to be abated by "every governor, lieutenant governor, or commander-in-chief of any of His Majesty's colonies in America, where any such mill, engine, forge, or furnace shall be erected or continued." This action by the mother country was intended to compel the colonists to buy their supplies of nails, hoops, blister steel, etc., in England. Acrelius writes, in 1756, that "no one is allowed to make nails," and we know that down to the Revolution the prohibitory measures above referred to were generally enforced in the colonies.

### The Manufacture of Charcoal Iron in Eastern and Central Pennsylvania after the Revolution.

After the Revolution, the manufacture of iron received a fresh impulse in the eastern part of Pennsylvania, and was further extended into the interior. Chester, Lancaster, and Berks counties shared conspicuously in the development, at this period, of the leading manufacturing industry of the State. Many blast furnaces and forges, and a few rolling and slitting-mills were built in these counties before 1800, and after the beginning of the present century this activity was continued. In 1786 there were seventeen furnaces, forges, and slitting-mills within thirty-nine miles of Lancaster. In 1838 there were one hundred and two furnaces, forges, and rolling-mills within a radius of fifty-two miles of Lancaster.

The iron industry was extended into Franklin county immediately after the close of the Revolution. Its first blast furnace was Mount Pleasant furnace, in Path valley, about five miles north-west of Loudon, which was erected soon after the peace of 1783, by three brothers, William, Benjamin, and George Chambers, who were Scotchmen. A forge was also erected by them as early as 1783. This furnace and forge were destroyed in 1843. A furnace called Richmond, built in 1865, now occupies the site of Mount Pleasant furnace. Other furnaces and forges in Franklin county soon followed the enterprise of the Chambers brothers. Franklin and Cumberland counties became prominent as an iron-manufacturing center after the Revolution, and far into the present century. Iron from the furnaces and forges of Cumberland county had been carried into the western portions of Pennsylvania on pack-horses before the Revolution, but after its close, both counties continued this trade for many years. In 1840 there were eight furnaces and eleven forges, bloomaries, and rolling-mills in Franklin county, and six furnaces and five forges and rolling-mills in Cumberland county.

The first iron enterprise in the Juniata valley was Bedford furnace, built in 1785, on Black Log creek, below its junction with Shade creek at Orbisonia, in Huntingdon county, by the Bedford Company, composed of Edward Ridgley, Thomas Cromwell, and George Ashman. A forge was built on the Little Aughwick creek by the same company, a short distance from the furnace, about 1785, which made horseshoe iron, wagon tire, harrow teeth, &c. Large stoves and other utensils were cast at the furnace. At the Philadelphia Exhibition was a stove-plate cast at this furnace in 1792. Bar-iron made at Bedford forge, was taken by bridle-paths to Pittsburgh. The furnace and forge have long been adandoned.

Centre furnace, on Spring creek, in Centre county, was the second furnace in the Juniata valley. It was built in the summer of 1792, by Colonel John Patton and Colonel Samuel Miles, both Revolutionary officers. The latter afterwards founded the iron works at Milesburg, in this county. The first forge in Centre county was Rock forge, on Spring creek, built in 1793 by General Philip Benner, of Chester county, who subsequently became an extensive manufacturer of Juniata iron.

Barree forge, on the Juniata, in Huntingdon county, was built about 1794 by Bartholomew & Dorsey, to convert the pig-iron of Centre furnace into bar-iron. Huntingdon furnace, in Franklin township, was built in 1796, four miles from the mouth of Spruce creek, on Warrior's Mark run, but after one or two blasts, a new stack was built a mile lower down the stream. These were the first iron enterprises in Huntingdon county. Juniata forge was built at Petersburg, about 1804 by Samuel Fahnestock and George Shoenberger, the latter becoming sole owner in 1805. Coleraine forges, on Spruce creek, were built in 1805 and 1809, by Samuel Marshall, a Scotch-Irishman.

The town of Petersburg, in Huntingdon county, was laid out in 1795 by Peter Shoenberger. On September 27, 1800, Peter sold to his brother George, the Petersburg tract of land. George Shoenberger died in 1814 or 1815. His only son, Dr. Peter Shoenberger, succeeded him in the ownership of his iron enterprises. Dr. Shoenberger was for many years prior to his death in 1854, the most prominent ironmaster in the United States. His iron enterprises were principally confined to the Juniata Valley, and Western Pennsylvania. The Shoenbergers were natives of Lancaster county.

Blister steel was made at Caledonia, near Bedford, for several years before the beginning of this century by William McDermett, who was born near Glasgow, in Scotland, and emigrated to this country at the close of the Revolutionary war. Mr. McDermett's works continued in successful operation for about ten years. Josephine, one of his daughters, married, in 1820, David R. Porter, then a young ironmaster on Spruce creek, but afterwards governor of Pennsylvania.

There was a very early forge in Juniata county. It was built in 1791 by Thomas Beale and William Sterrett, on Licking creek, two miles west of Mifflintown. It had two hammers, and was in operation about four years. The pig-iron for this forge was mainly obtained from Centre furnace, but some was brought from Cornwall furnace, and some from Bedford furnace.

In 1832 there were in operation in Huntingdon county, which then embraced Blair county, eight furnaces, ten forges, and one rolling and slitting-mill. Each of the furnaces yielded from twelve hundred to sixteen hundred tons of cast iron annually. In the same year, an incomplete list enumerated eight furnaces, and as many forges in Centre county. In 1850 there were in Huntingdon and Centre counties, and in Blair county, (formed out of Huntingdon and Bedford in 1846,) and in Mifflin county, forty-eight furnaces, forty-two forges, and eight rolling-mills, nearly all of which were in Huntingdon and Centre.

Most of the iron made in the Juniata valley during the palmy days of its iron industry was sold at Pittsburgh. Before the completion of the State canals and railroads, it was transported with great difficulty. Bar-iron from Centre county was first carried on the backs of horses to the Clarion river, where it was loaded on boats, upon which it was floated to Pittsburgh. Pig-iron and bar-iron from Huntingdon county were hauled to Johnstown, and thence floated to Pittsburgh down the Conemaugh river in the same manner as the bar-iron from Centre county.

About 1778 a bloomary forge was built on Nanticoke creek, near the lower end of Wyoming valley in Luzerne county, by John and Mason F. Alden. Another bloomary forge was erected in 1789 on Lackawanna river, about two miles above its mouth, by Dr. William Hooker Smith and James Sutton. Still another bloomary forge was erected in 1799 or 1800, on Roaring Brook, at Scranton, then called Slocum's Hollow, by two brothers, Ebenezer and Benjamin Slocum. The product of these bloomaries was taken down the Susquehanna river in Durham boats. They all continued in operation until about 1828.

In 1785 Henry Fulton established a "nailery" in Dauphin county, probably at Harrisburg. It is said to have been "only a little remote from a smithy." In 1805 there were two furnaces and two forges in this county.

In 1814 Peter Karthaus, a native of Hamburg, in Germany, but afterwards a merchant of Baltimore, and Rev. Frederick W. Geissenhainer, a native of Muhlberg, in Germany, established a furnace at the mouth of the Little Moshannon, or Mosquito creek, in the lower end of Clearfield county. The firm of Karthaus & Geissenhainer was dissolved on the 18th day of December, 1818. It had been organized in 1811, partly to mine and ship to eastern markets the bituminous coal of Clearfield county.

Other iron enterprises were established on the Susquehanna river and its northern branches and tributaries after the beginning of the present century, but the upper Susquehanna region of Pennsylvania has never been so prominent in the manufacture of iron as some other sections of the State.

The date of the erection of the first iron works in the Lehigh valley is uncertain. In 1808 William Henry, of Nazareth, in Northampton county, built a bloomary forge in that county, and on March 9, 1809, this forge made its first bar of iron. In 1824 Matthew S. Henry built a furnace in the same county, and on May 10, 1825, this furnace made its first ton of pig-iron. In 1826 Stephen Balliet built a furnace in Lehigh county, near the Blue mountains, which he called Lehigh.

### The Manufacture of Charcoal Iron in Western Pennsylvania.

The first iron manufactured west of the Allegheny mountains is said to have been made in 1790, in Fayette county, Pennsylvania, "in a smith's fire," by John Hayden, of that county, who enlisted his relative, John

Nicholson, of Philadelphia, then State Comptroller, in a scheme for building Fairfield furnace, on George's creek, seven miles south of Uniontown, which they completed in 1792. A forge was built about the same time, and probably before the furnace. In the meantime William Turnbull and Peter Marmie, of Philadelphia, built a furnace and forge on Jacob's creek, a mile or two above its entrance into the Youghiogheny river. The furnace was first blown in on November 1, 1790, and the iron was tried the same day in the forge. The furnace and forge were on the Fayette county side of the creek, and were called the Alliance iron works. This furnace was successfully operated for many years, and its stack is still standing, but in ruins. Other furnaces and forges in Fayette county soon followed those mentioned. John and Andrew Oliphant and Colonel Isaac Meason were interested in many of these enterprises.

In 1805 there were five furnaces and six forges in Fayette county. In 1811 there were ten blast furnaces, one air furnace, eight forges, three rolling and slitting-mills, one steel furnace, and five trip-hammers. At a subsequent date there were twenty furnaces in this county. The steel furnace above referred to was at Bridgeport, adjoining Brownsville, was owned by Morris Truman & Co., and made good steel. The first nail factory west of the Alleghenies was built at Brownsville, before 1800, by Jacob Bowman, at which wrought nails, made by hand, were produced in large quantities.

A furnace named Mary Ann was erected in Greene county at a very early day, about twenty miles from Uniontown, and on the opposite side of Ten-Mile creek from Clarksville. It was abandoned about 1810. It was probably built about 1800.

The rolling and slitting-mills which were in existence in Pennsylvania prior to 1816 neither puddled pig iron nor rolled bar iron, but rolled only sheet iron and nail plates with plain rolls from blooms heated in a hollow fire and hammered under a tilt-hammer. The first rolling-mill erected in the United States to puddle iron and roll iron bars was built by Colonel Isaac Meason in 1816 and 1817, on Redstone creek, about midway between Connellsville and Brownsville, at a place called Plumsock, in Fayette county. Colonel Meason, who did so much to develop the iron resources of Fayette county, was a native of Virginia. He died in 1819.

Westmoreland county speedily followed Fayette county in the manufacture of iron. Westmoreland furnace, near Laughlinstown, in Ligonier valley, on Four-Mile run, was built about 1792 by John Probst, who also built a small forge about the same time. Neither the furnace nor the forge was long in operation. General Arthur St. Clair built Hermitage furnace, on Mill creek, two miles northeast of Ligonier, about 1802. It was in blast in 1806. In 1810 it passed out of the hands of General St. Clair, and in 1817 it was in blast for the last time. The stack is still standing. Many other furnaces and forges in Westmoreland county followed those mentioned early in this century.

Shade furnace was built in 1807 or 1808, on Shade creek, in Somerset county, and was the first iron enterprise in the county. It was built by Gerehart and Reynolds upon land leased from Thomas Vickroy. There are now no iron enterprises in Somerset county.

The first iron enterprise in Cambria county was a forge at Johnstown, built on Stony creek, about 1809, by John Buckwalter, and subsequently removed to the Conemaugh river, also at Johnstown, where it was operated with more or less regularity down to about 1825. It was used to hammer bars out of Juniata pig-iron. In 1817 Thomas Burrell, the proprietor, offered wood-cutters "fifty cents per cord for chopping two thousand cords of wood at Cambria forge, Johnstown." Its last owner was Peter Levergood. About two hundred pounds of nails, valued at thirty dollars, were made at Johnstown by one establishment in the census year 1810.

The first iron enterprise in Indiana county was Indiana forge, on Finley's run, near the Conemaugh, built about 1837 by Henry & John Noble, who also built a small furnace as early as 1840. The forge was operated by water-power, but the furnace by steam-power. Pig-iron for the forge was at first obtained from Allegheny furnace, in Blair county. Iron ore for the furnace was obtained from the Allegheny furnace mines. John Noble owned, about 1837, a farm of about 200 acres in the heart of the present city of Altoona, which he then sold to David Robinson, of Pleasant Valley, for $4,500, taking in payment the contents of Mr. Robinson's country store, which he removed to Finley's run, and added to the capital stock of the firm of Henry & John Noble. The Altoona farm is now worth many million dollars. Three other charcoal furnaces in Indiana county were built in 1846 and 1847. All of the Indiana furnaces and its solitary forge have long been abandoned.

The beginning of the iron industry at Pittsburgh was made at a comparatively modern period. George Anshutz, the pioneer in the manufacture of iron at Pittsburgh, was an Alsacian by birth, and was born November 28, 1753. In 1789 he emigrated to the United States, and soon afterwards located at a suburb Pittsburgh, now known as Shady Side, where he built a small furnace on Two-Mile run, probably completing it in 1792. In 1794 it was abandoned for want of ore. It had been expected that iron ore could be obtained in the vicinity, but the expectation was not realized, and the expense entailed in bringing ore from other localities was too great. The enterprise seems to have been largely devoted to the casting of stoves and grates. The ruins of the furnace were visible until about 1850. George Anshutz died at Pittsburgh, February 28, 1837.

In 1807 there were three nail factories in existence at Pittsburgh—Porter's, Sturgeon's, and Stewart's, one of which made one hundred tons of cut and wrought nails annually. In 1810 about two hundred tons of cut and wrought nails were made at Pittsburgh. In 1813 there were two iron foundries at Pittsburgh—McClurg's and Anthony Beelen's, and one blister steel furnace, owned by Tuper & McKowan.

The first rolling-mill at Pittsburgh was built in 1811 and 1812 by Christopher Cowan, an Englishman. It was called the Pittsburgh rolling-mill. This mill had no puddling furnaces, nor was it built to roll bar-iron. It was built to manufacture sheet-iron, nail and spike rods, shovels, spades, etc. It stood at the intersection of Penn street and Cecil's alley, where the fourth ward school-house now stands. In 1818 it was owned by Ruggles, Stackpole, & Whiting, who failed in 1819. In 1826 it was owned by R. Bowen. The second roll-mill at Pittsburgh was the Union, on the Monongahela river, built in 1819, and accidentally blown up and permanently dismantled in 1829. the machinery being taken to Covington, Kentucky. This mill had four puddling furnaces—the first in Pittsburgh. It was also the first mill in Pittsburgh to roll bar-iron. It was built by Baldwin, Robinson, McNickle & Beltzhoover.

In 1829 Pittsburgh had eight rolling-mills, using six thousand tons of blooms, chiefly from the Juniata valley, and one thousand five hundred tons of pig-iron. In the same year there were nine foundries which consumed three thousand five hundred tons of iron. In 1828 the iron rolled was three thousand two hundred and ninety-one tons; in 1829 it was six thousand two hundred and seventeen tons; and in 1830 it was nine thouand two hundred and eighty-two tons. In 1831 there were two steel furnaces at Pittsburgh. In 1836 there were nine rolling-mills in operation, and eighteen foundries, engine factories, and machine-shops. In 1856 there were in Pittsburgh and Allegheny county twenty-five rolling-mills.

A blast furnace was built at Beaver Falls, on the west side of Beaver river, in Beaver county, in 1802, by Hoopes, Townsend & Co., and was blown in in 1804. A forge was connected with it from the beginning, and it was in operation in 1806. The furnace and forge were in operation in 1816. The whole enterprise was abandoned about 1826. The ore used was picked out of gravel banks in the neighborhood in very small lumps. There was another early furnace in this county, named Bassenheim, built in 1814 by Detmar Basse Muller, on Connoquenessing creek, about a mile west of the Butler county line. This furnace was abandoned at an early day.

Prior to 1846 there were only a few furnaces in the Shenango valley—all charcoal—one of the oldest of which was Springfield furnace, half a mile from Leesburg and seven miles southeast of Mercer, built in 1837 and active in 1849. Day, in 1843, writing of Mercer county, says: "Two furnaces were wrought formerly, but have since been abandoned." They may have been in the new county of Lawrence. The geographer, Joseph Scott, says, in 1806, that "a forge and furnace are now nearly erected" at New Castle. About 1810 there was a bloomary forge on Neshannock creek, "midway between Pearson's flour-mill and Harvey's paper-mill."

The first furnace in the once important but now nearly neglected iron-making district composed of Armstrong, Butler, Clarion, Venango, and other northwestern counties, was doubtless Bear Creek, in Armstrong county, commenced in 1818 by Ruggles, Stackpole & Whiting, who then owned the Pittsburgh rolling-mill. In the following year, owing to the failure of this firm, it passed, uncompleted, into the hands of Baldwin, Robinson, McNickle & Beltzhoover, of Pittsburgh. The furnace went into operation in 1819, but was abandoned long before 1850. Other furnaces soon followed Bear Creek, and from 1830 to 1850 this section of the State produced large quantities of charcoal pig iron. In 1850 there were eleven furnaces in Armstrong county, six in Butler, twenty-eight in Clarion, and eighteen in Venango—sixty-three in all. In 1858 there were eighteen in Armstrong, six in Butler, twenty-seven in Clarion, and twenty-four in Venango—seventy-five in all. All of these were charcoal furnaces, except four coke furnaces at Brady's Bend. Many of these furnaces had, however, been abandoned at the latter date, and nearly every one has since then been abandoned. The Great Western iron works at Brady's Bend, embracing a rolling-mill, and four furnaces to use coke, were commenced by Philander Raymond in 1840. They have been abandoned for many years. The rolling-mill was built in 1841 to roll bar-iron, but it afterwards rolled iron rails. Brady's Bend is now a deserted village.

The iron manufactured in the Allegheny valley was taken down the Allegheny river to Pittsburgh on keel-boats and arks, the business of transporting it being quite extensive.

## Introduction of Anthracite and Bituminous Coal in the Manufacture of Iron in Pennsylvania.

About 1840 an important revolution in the manufacture of iron occurred in this country, by the introduction of anthracite and bituminous coal as substitutes for charcoal in the blast-furnace. Of the two forms of mineral fuel—anthracite and bituminous coal—anthracite was the first to be largely used in American blast-furnaces, and for many years after its adaptability to the smelting of iron ore was established, it was in greater demand for this purpose than bituminous coal. In recent years, the popularity of these two fuels for blast-furnace use has been reversed.

Pennsylvania was the first State to make use of anthracite coal in the manufacture of pig-iron, and it was also the first to use bituminous coal for this purpose. Since 1840 a large part of her production of pig-iron has been made with anthracite coal, and since about 1855 her production of pig-iron with bituminous coal has steadily increased, and in late years has rapidly increased. With the beginning of the use of anthracite coal in her blast-furnaces, the distinctive charcoal era in her iron history may be said to have come to an end. Although her charcoal iron industry still exists in a healthy condition, its glory has departed.

Various experiments in the use of anthracite coal in the blast-furnace were made in Pennsylvania prior to 1839, all of which, while encouraging, led to no practical results. The most interesting of these experiments was that of Reverend Doctor Frederick W. Geissenhainer, who obtained a patent from the United States Government, on the 19th of December, 1833, for the application of the hot-blast to anthracite coal in the smelting of iron ore. In 1836 the doctor completed the erection of a small furnace, called Valley furnace, on Silver creek, in Schuylkill county, about ten miles north-east of Pottsville, at which he was successful in making pig-iron for a few weeks exclusively with anthracite coal, with the aid of a heated blast. The dates of the doctor's patent, and of his successful application of it, are important, as they definitely fix the fact that he was the first person in this country or in Europe to suggest and to accomplish the smelting of iron ore with anthracite coal, in connection with the hot-blast. The successful experiments of George Crane, in the same direction, in South Wales, succeeded those of Doctor Geissenhainer. Mr. Crane's patent is dated September 28, 1836, and on the 7th of February, 1837, he made his first pig-iron with anthracite coal and the hot-blast. Doctor Geissenhainer died on the 27th of May, 1838, before his plans for continuing the manufacture of pig-iron at Valley furnace were fully perfected.

In 1839 the Pioneer furnace, at Pottsville, which had been built in 1837 and 1838 by William Lyman, of Boston, was successful in manufacturing pig-iron for one hundred days with anthracite coal and the hot-blast. For this achievement, a premium of $5,000 was paid to Mr. Lyman by Nicholas Biddle and others. This furnace did not long continue in operation.

In 1838 the Lehigh Crane Iron Company was organized for the manufacture of pig-iron with anthracite coal, and in December of this year David Thomas, a native of South Wales, who had been in the service of Mr. Crane, at Yniscedwin, was employed by the company to superintend the erection and management of its contemplated blast-furnace. This furnace was built at Catasauqua, in Lehigh county, in 1839 and 1840, and was successfully blown in by Mr. Thomas, on the 3d of July of the latter year, its first cast taking place on the following day. This furnace continued in operation for many years, under Mr. Thomas' management. From its erection may be dated the beginning, in a commercial sense, of our anthracite pig-iron industry, and Mr. Thomas, through his superior skill in the use of the new fuel, may justly be styled the father of that industry. He was born in Glamorganshire, November 3, 1794, and died at Catasauqua, June 20, 1882, in his eighty-eighth year.

Although the revolution to which we have referred dates properly from the first successful use of anthracite coal in the blast-furnace, this fuel had been previously used, in a small way, in our country, in other iron-making operations. Its use in these operations became general about the time when pig-iron was made with it.

Experiments in the manufacture of pig-iron with bituminous coke were made in Pennsylvania at an early day, but were not successful. The earliest of these experiments that we have been able to discover was made at Bear Creek furnace, in Armstrong county, in 1819. This furnace was built to use coke, with steam-power, and in the year named, it was blown in with this fuel, but the blast was too weak, and the furnace chilled after two or three tons of iron had been made. Charcoal was then substituted.

In a report by a committee of the Senate of Pennsylvania, of which Hon. S. J. Packer was chairman, which was read on March 4, 1834, it was stated that "the coking process is now understood, and our bituminous coal is quite as susceptible of this operation, and produces as good coke, as that of Great Britain. It is now used, to a considerable extent, by our iron manufacturers in Centre county, and elsewhere." The use of coke here referred to was in connection with the conversion of pig-iron into refined iron, in the refinery or "run-out." It is historically certain that down to the date of Mr. Packer's report no successful experiment in the manufacture of pig-iron, with coke as fuel, had been made in this country.

The first instance of complete success in the manufacture of pig-iron in this country with bituminous coal in the form of coke, occurs in 1835, in which year William Firmstone was successful in making good gray forge iron for about one month, at the end of a blast at Mary Ann Furnace, in Huntingdon county, Pennsylvania, with coke made from Broad Top coal. This iron was taken to a forge three miles distant, and made into blooms. The coke used by Mr. Firmstone was not specially prepared for the purpose, but had been made for use in the "run-out" fires connected with the forge. In a pamphlet, published April, 1836, Isaac Fisher, of Lewistown, Pennsylvania, stated that "successful experiments have lately been tried in Pennsylvania in making pig-iron with coke." It is probable that Mr. Fisher had in mind Mr. Firmstone's experiment, although other experiments may have been made in the meantime. We give Mr. Firmstone the credit of having made the first coke pig-iron produced in this country. He was a native of Shropshire, in England, and died near Easton, Pennsylvania, September 11, 1877, in his sixty-seventh year. He was born October 19, 1810.

In 1836 or 1837, a small quantity of coke pig-iron was made by F. H. Oliphant, at his furnace, called Fairchance, near Uniontown, Pennsylvania. This was the first pig-iron made with coke from the now celebrated Connellsville coke region.

Other experiments in the manufacture of pig-iron with coke took place soon after that of Mr. Firmstone, but the first notable success in the use of coke in the blast furnace in this country, was achieved at three furnaces in Western Maryland. Lonaconing furnace, in the Frostburg coal basin, on George's creek, eight miles northwest of Frostburg, in Alleghany county, was built in 1837 by the George's Creek Company, to use coke, and in June, 1839, it was making about seventy tons per week of good foundry iron. In the same coal basin, on the south branch of Jennings' run, nine miles northwest of Cumberland, two large blast furnaces were built in 1840 by the Mount Savage Company, to use the same fuel. These furnaces were for several years successfully operated with coke.

But the use of coke did not come rapidly into favor, and many experiments with it were attended with loss. It was not until after 1850 that its use began to exert an appreciable influence upon the manufacture of pig-iron. In 1849 there was not one coke furnace in Pennsylvania in blast, but in 1856 there were twenty-one furnaces in Pennsylvania, and three in Maryland which were using coke. After 1,856 the use of this fuel rapidly increased in Pennsylvania, and was extended to other States.

Experiments in the use of uncoked coal in the blast furnace were made in Maryland, Western Pennsylvania, and Ohio, as early as 1840, but the first truly successful use of this fuel was at Clay furnace, in Mercer county, Pennsylvania, in 1845, the furnace being then operated by Himrod & Vincent. The coal used was the now well-known splint coal or block coal of the Shenango valley, which does not coke readily. Mr. David Himrod undertook, and successfully accomplished the experiment. In the following year Messrs. Wilkeson, Wilkes & Co. built Lowell furnace, in Poland township, Mahoning county, Ohio, expressly to use block coal, and on the 8th of August, 1846, this furnace was successfully blown in with this fuel, by John Crowther. Mr. Crowther was born in Shropshire, England, May 7, 1797. After many years' residence in this country he returned to his native land, and died there, at Longton, in Staffordshire, April 15, 1861, in his sixty-fourth year.

Bituminous coal was used at an early day in the heating furnaces attached to American rolling and slitting-mills, and in 1817, when the rolling-mill was established at Plumsock, in Fayette county, Pennsylvania, it was used in puddling furnaces. Raw coal was used in the puddling and heating furnaces of this mill, and coke in the refinery. It was not, however, until about 1830, when rolling-mills became numerous at Pittsburgh, that the use of bituminous coal in these establishments assumed noteworthy importance.

Before the close of the charcoal era, steam-power had been applied to the blowing of American furnaces, but water-power was still in general use. The necessity of increasing the blast and other considerations, soon led to the more general use of steam blowing-engines, in connection with anthracite and bituminous furnaces. Another improvement in blast-furnace management also had its beginning about the close of the charcoal era, namely, the utilization of the combustible gases emitted from blast-furnaces. These gases were first used to heat the boilers for the blowing-engines, and afterwards to heat the hot-blast stoves.

### The Manufacture of Steel in Pennsylvania.

Blister steel was made in Pennsylvania at a very early day in its history, as has already been shown, and its manufacture was continued in a small way until it was practically superseded in very recent years by the introduction of modern methods of producing steel.

The manufacture of crucible steel was undertaken at various places in the United States, between the years 1830 and 1860, but it was not until the latter year that this branch of our steel industry can be said to have been successfully established. Pittsburgh was prominent in making attempts to manufacture crucible steel, and some of these early attempts were successful, but down to the year last mentioned, the most successful experiment in the manufacture of this steel in this country, was made at Jersey City, New Jersey, by the Adirondack Iron and Steel Company, which made small quantities of good steel as early as 1849. In 1860, Hussey, Wells & Co., and in 1862, Park, Brother & Co., two enterprising Pittsburgh companies, were successful in manufacturing crucible steel of the best quality *as a regular product*, and in 1863, the Adirondack works were successful in accomplishing the same result. Since the achievements of these companies, no difficulty has been experienced in making crucible steel in this country, and Pennsylvania has been foremost in building up this industry. The largest crucible steel works in the world are those of Park, Brother & Co.

While our limited space does not afford the opportunity to give all the particulars of the introduction of the manufacture of Bessemer steel in this country, it is a historical fact, that a native of Pittsburgh, but a resident of Kentucky, William Kelly, successfully claimed in 1857, before the United States Commissioner of Patents, that he, and not Henry Bessemer of England, was the inventor of the pneumatic process for making steel.

The manufacture of pneumatic, or Bessemer steel in the United States, dates from 1864, when William F. Durfee was successful in making steel by this process, at experimental works which had been erected at Wyandotte, Michigan, by the Kelly Process Company, a corporation organized in May, 1863, by Captain E. B. Ward, of Detroit, Daniel J. Morrell, of Johnstown, William M. Lyon, and James Park, Jr., of Pittsburgh, and Z. S. Durfee, of New Bedford, Massachusetts, to make steel under the patents of Mr. Kelly. In 1865 Bessemer steel was also successfully made at Troy, New York, by A. L. Holley, at experimental works which he had erected for the firm of Winslow, Griswold & Holley, which had obtained the control in this country of Mr. Bessemer's patents. It was not, however, until 1867, that the manufacture of Bessemer steel in this country was established on a commercial basis. In this year the Pennsylvania steel works, at Harrisburg, were put in operation, and other Bessemer works soon followed in Pennsylvania, and in other States. The conflicting interests represented by the two experimental enterprises above mentioned, at Wyandotte and Troy, were consolidated in 1866. Alexander Lyman Holley, was born at Lakeville, Connecticut, July 20, 1832, and died at Brooklyn, New York, January 29, 1882.

The manufacture of open-hearth steel was introduced into the United States soon after we commenced to experiment with the pneumatic, or Bessemer, process. The credit of introducing it is due to Honorable Abram S. Hewitt, of New York, who was favorably impressed with the Siemens-Martin process when visiting the Paris exposition in 1867 as a commissioner of the United States. At his request Frederick J. Slade, his business associate, went to Sireuil to study the process in order to put it into practice in this country. The first open-hearth furnace introduced into this country for the manufacture of steel by the Siemens-Martin process was built in 1868 by Cooper, Hewitt & Co., proprietors of the works of the New Jersey Steel and Iron Company, at Trenton, New Jersey. The building of this furnace was commenced in the spring of 1868, and in December of the same year it was put in operation. Other open-hearth furnaces soon followed that of Cooper, Hewitt & Co., but it was not until about 1880 that the manufacture of open-hearth steel in the United States can be said to have become a prominent national industry. Pennsylvania now annually makes more open-hearth steel than any other State.

### Miscellaneous facts of Interest to Pennsylvania Iron and Steel Manufacturers.

The first shipment of iron ore from the Lake Superior region was made in 1850, and consisted of about five tons, "which was taken away by Mr. A. L. Crawford, of Newcastle, Pennsylvania." A part of this ore was made into blooms and rolled into bar-iron. "The iron was found to be most excellent, and served to attract the attention of Pennsylvania ironmasters to this new field of supply for their furnaces and rolling-mills. The first use of Lake Superior ore in a blast furnace occurred in Pennsylvania in 1855, when a boat load of ore from the Jackson mine was taken at great expense to the Sharpsville furnace, in Mercer county, then owned by David & John P. Agnew, at which it was successfully smelted in that year with the block coal of the Shenango valley.

David Thomas, of Catasauqua, Pennsylvania, was the first person in the United States to fully realize the value of powerful blowing-engines in the working of blast furnaces. About 1852 he introduced engines at his furnaces at Catasauqua which increased the pressure to double that which was then customary in England. The results were surprising. But many years elapsed before Mr. Thomas' example was generally followed in this country. Within the past few years, however, our superior blast-furnace practice has been mainly due to the use of blowing-engines of great power.

At the Siberian rolling-mill of Rogers & Burchfield, at Leechburg, in Armstrong county, Pennsylvania, natural gas, taken from a well twelve hundred feet deep, was first used as a fuel in the manufacture of iron. In the fall of 1874 it was announced that during the preceding six months the gas had furnished all the fuel required for puddling and heating, and for making steam, not one bushel of coal having been used.

Down to 1846, when John Griffen built a rolling-mill at Norristown, Pennsylvania, for Moore & Hooven, steam boilers had never been put over puddling and heating furnaces in any country. In this mill all the steam that was needed for driving the mill was generated in boilers over the puddling and heating furnaces, no auxiliary boilers being used or needed, thus greatly economizing fuel. Mr. Griffen is entitled to the credit of having originated this important economical innovation.

The Montour rolling-mill, at Danville, Pennsylvania, was built in 1845 expressly to roll rails, and here were rolled, in October of that year, the first T rails made in the United States. The first T rail rolls made in this country were made for the Montour Iron Company by Haywood & Snyder, proprietors of the Colliery iron works at Pottsville, the work being done at their branch establishment at Danville.

The first Bessemer steel rails ever made in this country were rolled at the North Chicago rolling-mill on the 24th of May, 1865, from hammered blooms made at the Wyandotte rolling-mill from steel ingots made at the experimental steel works at Wyandotte. The rolls upon which the blooms were rolled at the North Chicago rolling-mill had been in use for rolling iron rails. Several of these steel rails were laid in the track of one of the railroads running out of Chicago, and were still in use in 1875. The first Bessemer steel rails rolled in the United States upon order, in the way of regular business, were rolled by the Cambria Iron Company, at Johnstown, Pennsylvania, in August, 1867, from ingots made at the works of the Pennsylvania Steel Company, at Harrisburg, Pennsylvania, and by the Spuyten Duyvil Rolling-Mill Company, at Spuyten Duyvil, New York, early in September of that year, from ingots made at the Bessemer steel works at Troy, New York, then owned by Winslow & Griswold.

The first thirty-foot rails rolled in this country are claimed to have been rolled at the Cambria iron works, at Johnstown, Pennsylvania, in 1855. These rails were perfectly made, but there being no demand for them they were used in the tracks of the Cambria Iron Company. The first thirty-foot rails rolled in this country on order were rolled at the Montour rolling-mill, in January, 1859, for the Sunbury and Erie Railroad Company.

The first sixty-foot, or double-length, rails rolled in this country were rolled by the Edgar Thomson Steel Company, at Braddock's Station, near Pittsburgh, Pennsylvania, in the fall of 1875. In 1877 the Lackawanna Iron and Coal Company, at Scranton, Pennsylvania, commenced to roll sixty-foot rails. At the Philadelphia Exhibition, in 1876, the Edgar Thomson Steel Company exhibited a steel rail which at that time was the longest that had ever been rolled. It was one hundred and twenty feet long, and weighed sixty-two pounds to the yard.

The Phœnix wrought-iron column, which is now in general use in this country and in Europe in the construction of wrought-iron bridges, viaducts, depots, warehouses, and other structures, is the invention of Samuel J. Reeves, of Philadelphia. The invention was patented on June 17, 1862. Mr. Reeves was born at Bridgeton, New Jersey, March 4, 1818, and died at Phœnixville, Pennsylvania, December 15, 1878.

The beginning of the regular manufacture of Connellsville coke dates from the summer of 1841, when William Turner, senior, P. McCormick, and James Campbell, employed John Taylor to erect two ovens for making coke on his farm lying on the Youghiogheny river, a few miles below Connellsville, in Pennsylvania. The ovens were built of the bee-hive pattern. After repeated failures a fair quality of coke was produced in the winter of 1841.

**Statistics of the Manufacture of Iron and Steel in Pennsylvania in 1882.**

The following table shows the total production of the various forms of iron and steel in the United States in 1882, the production of these forms by Pennsylvania in the same year, and the percentage of the total production in that year contributed by Pennsylvania.

| PRODUCTS. | TONS OF 2,000 POUNDS. | | Percentage by Pennsylvania. |
|---|---|---|---|
| | United States. | Pennsylvania. | |
| Anthracite pig-iron, | 2,042,138 | 1,453,646 | 71 |
| Bituminous pig-iron, | 2,438,078 | 945,635 | 39 |
| Charcoal pig-iron, | 697,906 | 49,975 | 7 |
| Total pig-iron, | 5,178,122 | 2,449,256 | 48 |
| Iron rails, | 227,874 | 82,764 | 36 |
| Bessemer steel rails, | 1,438,155 | 759,524 | 53 |
| Open-hearth steel rails, | 22,765 | 8,620 | 38 |
| Total rails, | 1,688,794 | 850,908 | 50 |
| Bar, hoop, and shaped iron, | 1,545,788 | 685,049 | 44 |
| Plate and sheet-iron, | 412,814 | 258,603 | 63 |
| Cut nails and spikes, | 307,355 | 97,470 | 32 |
| Total rolled iron, except rails, | 2,265,957 | 1,041,122 | 46 |
| Bessemer steel ingots, | 1,696,450 | 933,631 | 55 |
| Open-hearth steel ingots, | 160,542 | 67,822 | 42 |
| Crucible steel ingots, | 85,089 | 65,139 | 77 |
| Blister and other steel, | 3,014 | 2,114 | 70 |
| Total steel, | 1,945,095 | 1,068,706 | 55 |
| Pig and scrap blooms from forges, | 42,939 | 29,408 | 68 |

In 1882 there were in Pennsylvania two hundred and seventy-seven completed furnaces, and seven in course of erection; one hundred and forty-nine completed iron rolling-mills, and seven in course of erection; seven completed Bessemer steel works, and one in course of erection; fifteen completed open-hearth steel works, and one in course of erection; seventeen crucible steel works, five other steel works, and thirty-one forges for making blooms from pig and scrap-iron. Of the completed furnaces, one hundred and fifty-nine were classed as anthracite, eighty-one as bituminous coal and coke, and thirty-seven as charcoal. In 1882 Pennsylvania contained sixty-seven counties, and in forty-four of these counties the manufacture of iron and steel, or of iron alone, was then prosecuted, as is shown in the following table of completed iron and steel works at the close of the year.

| COUNTIES. | Blast furnaces. | Iron rolling-mills. | Bessemer steel works. | Open-hearth steel works. | Crucible steel works. | Miscellaneous steel works. | Bloom forges. |
|---|---|---|---|---|---|---|---|
| Adams, | 1 | | | | | | |
| Allegheny, | 16 | 35 | 3 | 9 | 11 | 1 | |
| Armstrong, | 3 | 3 | .. | 1 | | | |
| Beaver, | .. | 1 | .... | .... | 1 | | |
| Bedford, | 4 | | | | | | |
| Berks, | 27 | 12 | .... | .... | .... | .... | 6 |
| Blair, | 12 | 4 | .... | .... | .... | .... | 2 |
| Bradford, | .... | 1 | | | | | |
| Bucks, | 1 | 1 | | | | | |
| Cambria, | 7 | 1 | 1 | 1 | .... | 1 | |
| Carbon, | 4 | 1 | | | | | |
| Centre, | 5 | 5 | .... | .... | .... | .... | 4 |
| Chester, | 4 | 8 | ... | .... | .... | .... | 2 |
| Clarion, | 1 | | | | | | |
| Clinton, | 2 | . | ... | .... | .... | .... | 1 |
| Columbia, | 3 | 1 | .... | .... | .... | .... | 1 |
| Crawford, | .. | 1 | | | | | |
| Cumberland, | 4 | 1 | ... | .... | .... | .. | 3 |
| Dauphin, | 11 | 5 | 1 | 1 | .... | .... | 2 |
| Delaware, | 1 | 2 | .... | 1 | ... | 2 | |
| Erie, | 1 | 1 | | | | | |
| Fayette, | 6 | 1 | | | | | |
| Franklin, | 5 | ... | .... | .... | .... | ... | 1 |
| Huntingdon, | 7 | . | .... | .... | .... | .... | 2 |
| Lackawanna, | 5 | 2 | 1 | | | | |
| Lancaster, | 13 | 6 | .... | .... | .... | .... | 2 |
| Lawrence, | 9 | 3 | | | | | |
| Lebanon, | 13 | 2 | .... | .... | .... | .... | 2 |
| Lehigh, | 27 | 4 | | | | | |
| Lycoming, | 2 | 2 | | | | | |
| Mercer, | 21 | 6 | | | | | |
| Mifflin, | 3 | 1 | .... | .... | .... | 1 | |
| Montgomery, | 15 | 10 | | | | | |
| Montour, | 6 | 3 | | | | | |
| Northampton, | 20 | 3 | 1 | 1 | | | |
| Northumberland, | 2 | 3 | | | | | |
| Perry, | 2 | 1 | .... | .. | .. | .... | |
| Philadelphia, | 1 | 10 | ... | 1 | 5 | | |
| Schuylkill, | 8 | 6 | ... | ... | ... | .... | 1 |
| Tioga, | 1 | | | | | | |
| Union, | 2 | | | | | | |
| Washington, | ... | 1 | | | | | |
| Westmoreland, | 1 | 1 | | | | | |
| York, | 1 | 1 | | | | | |
| Total, | 277 | 149 | 7 | 15 | 17 | 5 | 31 |

In the above table the number of separate furnace stacks is given, more than one furnace being frequently owned by one firm or company. The steel works given above are not always separate establishments from the iron rolling-mills enumerated, but all steel works are included in the table, whether operated in connection with iron rolling-mills or not.

The following table shows the total number of completed iron and steel works in the United States at the close of 1882, the number of these works in Pennsylvania at the same time, and the percentage of the total number contained in Pennsylvania:

| Kind of Works. | United States. | Pennsylvania. | Percentage in Pennsylvania. |
|---|---|---|---|
| Charcoal blast-furnaces, | 242 | 37 | 15 |
| Anthracite blast-furnaces, | 225 | 159 | 17 |
| Bituminous blast-furnaces, | 210 | 81 | 39 |
| Total blast-furnaces, | 677 | 277 | 41 |
| Iron rolling-mills, | 347 | 149 | 43 |
| Bessemer steel works. | 14 | 7 | 50 |
| Open-hearth steel works, | 29 | 15 | 52 |
| Crucible steel works, | 34 | 17 | 50 |
| Miscellaneous steel works, | 10 | 5 | 50 |
| Pig and scrap forges, | 53 | 31 | 58 |
| Ore bloomaries, | 69 | | |

Since about the middle of the last century, Pennsylvania has been the foremost iron-making State in the Union. In 1791 there were sixteen furnaces and thirty-seven forges in Pennsylvania. In 1816 there were forty-four furnaces, seventy-eight forges and one hundred and seventy-five naileries. In 1849 there were two hundred and ninety-eight furnaces, one hundred and twenty-one forges, six bloomaries, and seventy-nine rolling-mills. Of the furnaces existing in 1849, nearly all were charcoal furnaces, only fifty-seven being anthracite, and eleven bituminous coal and coke furnaces. These statistics we now supplement with correct and full statistics for 1882, which require no further comment than that we should simply call attention to the really marvelous fact , that in that year Pennsylvania made forty-eight per cent. of all the pig-iron made in the United States; fifty per cent. of all the rails; forty-six per cent. of all the rolled iron, except rails; and fifty-five per cent. of all the steel.

Erratum.—On second line, second paragraph, page 16, after "Northeast," should read, "The next iron enterprises were a furnace and forge at Principio, the former built in 1723 and the latter in 1724."

# BLAST FURNACES.

**TABLE** *showing the number of Blast Furnaces, in and out of blast, the production etc., in the several counties of Pennsylvania, compiled from returns made to this office for the year ended December 31, 1882.*

| COUNTY. | NUMBER OF STACKS. | | | Average number of days in operation during the year. | Number of persons employed. | Amount paid in wages during the year. | Number of TONS of iron produced during the year. |
|---|---|---|---|---|---|---|---|
| | In blast. | Out of blast. | Total. | | | | |
| Adams, | | 1 | 1 | | | | |
| Allegheny, | 14 | 2 | 16 | 340 | 1,928 | $1,116,950 53 | 397,709.02 |
| Armstrong, | 3 | . . | 3 | 320 | 110 | 41.775 82 | 25,937.06 |
| Bedford, | 3 | 1 | 4 | 207 | 231 | 101,392 25 | 21,282.00 |
| Berks, | 21 | 7 | 28 | 326 | 781 | 343,091 98 | 139.421.00 |
| Blair, | 9 | 1 | 10 | 330 | 552 | 163,285 69 | 58.590.11 |
| Bucks, | 1 | | 1 | 310 | 367 | 156,285 57 | 27.276.00 |
| Cambria, | 6 | 1 | 7 | 365 | 500 | 237,736 58 | 106 236.00 |
| Carbon, | 4 | . . | 4 | 339 | 132 | 59,955 20 | 27,742.15 |
| Centre, | 4 | 1 | 5 | 280 | 123 | 46,006 26 | 8,398.00 |
| Chester, | 3 | 1 | 4 | 179 | 117 | 44 188 60 | 19,013.15 |
| Clarion, | 1 | 1 | 2 | 270 | 250 | 99,000 00 | 7,526.00 |
| Clinton, | . . . | 1 | 1 | | | | |
| Columbia, | 2 | 1 | 3 | 332 | 255 | 103.881 00 | 13,320 00 |
| Cumberland, | 3 | 1 | 4 | 291 | 100 | 62 904 70 | 9,078.00 |
| Dauphin, | 9 | 4 | 13 | 269 | 724 | 284,333 50 | 92,976.00 |
| Delaware, | 1 | | 1 | 355 | 93 | 48,560 00 | 29,693.00 |
| Erie, | . . . | 1 | 1 | | | | |
| Fayette, | 4 | 1 | 5 | 333 | 266 | 172 912 73 | 46,119.00 |
| Franklin, | 4 | 1 | 5 | 244 | 495 | 92,538 31 | 9.993.10 |
| Huntingdon, | 4 | 2 | 6 | 302 | 235 | 102,586 75 | 27.224.00 |
| Lackawanna, | 5 | . . . | 5 | 365 | 500 | . . | 150.000.00 |
| Lancaster, | 11 | 3 | 14 | 292 | 765 | 246,018 07 | 81,932.10 |
| Lawrence, | 4 | 5 | 9 | 362 | 219 | 159.482 86 | 82 840 00 |
| Lebanon, | 10 | | 10 | 349 | 406 | 171.648 88 | 92,455.00 |
| Lehigh, | 28 | 2 | 30 | 336 | 1,298 | 643.899 34 | 323.562.09 |
| Mercer, | 8 | 13 | 21 | 292 | 526 | 278.725 52 | 144 853.00 |
| Mifflin, | 4 | | 4 | 300 | 178 | 80 961 40 | 19,872 00 |
| Montgomery, | 7 | 7 | 14 | 233 | 358 | 175.884 47 | 83,884.10 |
| Montour, | 4 | 2 | 6 | 333 | 187 | 78.740 81 | 35 162.00 |
| Northampton, | 17 | 2 | 19 | 296 | 1,228 | 774,879 73 | 218,699.00 |
| Northumberland, | 1 | 1 | 2 | 320 | 28 | 13,592 18 | 4,421.00 |
| Perry, | 2 | . . | 2 | 317 | 100 | 42,931 45 | 20,171.00 |
| Philadelphia, | . . | 1 | 1 | | | | |
| Schuylkill, | 5 | 1 | 6 | 314 | 230 | 87,336 67 | 34,416.00 |
| Tioga, | . . | 1 | 1 | | | | |
| Union, | 1 | . . . | 1 | 305 | 125 | . . . | 5,015.00 |
| Westmoreland, | 1 | . . . | 1 | 245 | 60 | 31,640 01 | 13,623.17 |
| York, | 1 | . . . | 1 | 265 | 42 | 13,029 73 | 5,351.00 |
| | 205 | 66 | 271 | 304 | 13,509 | $6,067,156 59 | 2,383,794.05 |

# ROLLING-MILLS.

**TABLE** *showing the number of rolling-mills, number of furnaces, production, etc. in the several counties of Pennsylvania, compiled from returns made to this office for the year ended December 31, 1882.*

| COUNTY. | Number of establishments. | Number of puddling-furnaces. | Number of heating-furnaces. | Number of trains of rolls. | Number of nail machines. | Average number of days in operation during the year. | Total number of persons employed. | Total amount paid in wages during the year. | Number of TONS of iron, of all grades, manufactured. | Number of kegs (100 lbs.) of nails, tacks, and spikes made. |
|---|---|---|---|---|---|---|---|---|---|---|
| Allegheny, . . . . . . | 35 | *935 | 353 | 184 | 406 | 204 | 17,048 | $7,728,443 19 | 432,560 | 517,778 |
| Armstrong, . . . . . | 3 | 40 | 13 | 7 | . . . | 219 | 396 | 275.370 57 | 13,424 | |
| Beaver, . . . . . . . . | 1 | 12 | 3 | 2 | | 50 | 60 | 10.922 50 | 587 | |
| Berks, . . . . . . . . | 13 | 86 | 42 | 29 | 136 | 275 | 1,893 | 899,861 17 | 99,962 | 231,065 |
| Blair, . . . . . . . . . | 4 | 69 | 13 | 15 | 50 | 279 | 360 | 182,623 00 | 14,073 | 32,292 |
| Bradford, . . . . . | 1 | 5 | 1 | 2 | 26 | 270 | 100 | 42,000 00 | . . . . . | 38,132 |
| Bucks, . . . . . . . | 1 | . . | 2 | 2 | . . . . | 300 | 100 | 50.000 00 | 5,000 | |
| Cambria, . . . . . . . | 1 | 22 | 34 | 6 | . . . . | 290 | 1,300 | 607,527 16 | 14,240 | |
| Carbon, . . . . . . . | 1 | 9 | 1 | 2 | . . . . | 300 | 65 | 36 230 22 | 4,879 | |
| Centre, . . . . . . . . | 4 | 8 | 6 | 8 | . . . . | 166 | 84 | 35,834 23 | 6,610 | |
| Chester, . . . . . . | 8 | 87 | 58 | 28 | . . . . | 259 | 2,720 | 1,217.007 50 | 72,079 | |
| Columbia, . . . . . | 1 | 11 | 3 | 2 | . . | 242 | 120 | 81,301 60 | 8,193 | |
| Cumberland, . . . . | 1 | 9 | 3 | 2 | 75 | 271 | 412 | 159,491 23 | 1,541 | 171,527 |
| Dauphin, . . . . . . | 4 | 59 | 22 | 12 | 94 | 242 | 1,080 | 523,667 00 | 36.664 | 215,000 |
| Delaware, . . . . . | 1 | 22 | 5 | 5 | . . . | 302 | 322 | 192,000 00 | 8,717 | |
| Erie, . . . . . . . . . | 1 | 19 | 4 | 4 | . . . | 236 | 221 | 109,122 31 | 9,190 | |
| Lackawanna, . . . . | 2 | 113 | 36 | 14 | . . | 240 | 1,225 | 512,000 00 | 66,000 | |
| Lancaster, . . . . . . | 6 | 69 | 21 | 15 | . . | 278 | 886 | 316,908 39 | 37,650 | 23,700 |
| Lawrence, . . . . . . | 2 | 41 | 14 | 8 | 55 | 182 | 690 | 306,270 85 | 12.033 | 93,175 |
| Lebanon, . . . . . . | 3 | 11 | 7 | 6 | . . . | 280 | 228 | 94.500 00 | 8,000 | |
| Lehigh, . . . . . . | 4 | 92 | 23 | 19 | . . . . | 201 | 1,654 | 543.604 44 | 46,066 | |
| Lycoming, . . . . . . | 2 | 16 | 3 | 5 | . . | 300 | 150 | 65,000 00 | 5,166 | 19,228 |
| Mercer, . . . . . . . . | 5 | 118 | 20 | 19 | 86 | 222 | 1,694 | 691,011 51 | 28,906 | 130,339 |
| Mifflin, . . . . . . . | 1 | 21 | 4 | 5 | . . | 300 | 142 | 80,000 00 | 5.811 | |
| Montgomery, . . . . | 11 | 171 | 53 | 36 | 75 | 246 | 3,155 | 1,573,484 24 | 79,630 | 250,290 |
| Montour, . . . . | 3 | 50 | 31 | 9 | . . . . | 261 | 1,281 | 477,672 84 | 65,347 | |
| Northampton, . . | 2 | 28 | 10 | 3 | . . | 279 | 344 | 109,343 48 | 15,667 | |
| Northumberland, . | 3 | 27 | 5 | 6 | 78 | 267 | 400 | 199,529 66 | 4,300 | 140,389 |
| Perry. . . . . . . . | 1 | 16 | 6 | 4 | 54 | 272 | 330 | 153,921 38 | . . . | 101,170 |
| Philadelphia, . . . . | 9 | 70 | 48 | 36 | 50 | 274 | 1,529 | 870,691 23 | 65,861 | 99,550 |
| Schuylkill, . . . . | 6 | 56 | 27 | 16 | . . . . | 253 | 707 | 265.656 06 | 25,279 | |
| Westmoreland, . . . | 1 | 12 | 1 | 3 | . . . . | 245 | 250 | 130,000 00 | 3,374 | |
| York, . . . . . . . . . | 1 | 10 | 2 | 2 | . . . | . . . | 100 | . . . . . . . . . | 4,000 | |
| | 142 | 2,314 | 874 | 516 | 1,185 | 251 | 41,046 | $18,540,995 76 | 1,200,809 | 2,063,635 |

*And ten Danks rotary puddling-furnaces.

# BLOOMARIES.

**A STATEMENT** *showing the production, &c., of Bloomaries in the several counties of the State, compiled from returns made to this office, for the year ended December 31, 1882.*

| COUNTY. | Number of establishments. | Number of refineries. | Number of fires. | Number of hammers. | Average number of days in operation during the year. | Number of persons employed. | Amount paid in wages during the year. | Number of tons (2,464) of blooms manufactured. |
|---|---|---|---|---|---|---|---|---|
| Berks, | 4 | 3 | 18 | 6 | 266 | 67 | $26.490 30 | 3,002 |
| Blair, | 1 | 1 | 3 | 1 | 233 | 24 | 5,300 00 | 523 |
| Centre, | 3 | 2 | 30 | 3 | 279 | 95 | 55,410 00 | 5,114 |
| Chester, | 2 | 1 | 7 | 2 | 256 | 36 | 20,191 13 | 1 379 |
| Cumberland, | 3 | 3 | 14 | 3 | 280 | 47 | 37,200 00 | 3,850 |
| Dauphin, | 1 | 1 | 5 | 1 | 220 | 26 | 12,000 00 | 800 |
| Franklin, | 1 | 1 | 7 | 2 | 237 | 26 | 12,649 03 | 1,302 |
| Huntingdon, | 2 | 2 | 11 | 2 | 217 | 46 | 14,348 75 | 1,935 |
| Lancaster, | 2 | 2 | 6 | 2 | 100 | 21 | 2,889 04 | 350 |
| Lebanon, | 2 | 1 | 10 | 2 | 255 | 71 | 33.736 13 | 3,515 |
| Lycoming, | 1 | 1 | 8 | 1 | 230 | 26 | 6.000 00 | 600 |
| Perry, | 2 | 2 | 12 | 2 | 277 | 65 | 30,950 00 | 3,012 |
|  | 24 | 20 | 131 | 27 | 237 | 550 | $257,164 34 | 25,382 |

# CRUCIBLE STEEL.

| COUNTY. | Number of establishments. | Average number of days in operation. | Number of persons employed. | Amount paid in wages during the year. | Amount of product, (pounds.) |
|---|---|---|---|---|---|
| Allegheny, | 6 | 262 | 2,209 | $1,548,954 22 | 81,470,361 |
| Armstrong, | 1 | 280 | 65 | 30.000 00 | 10,000 000 |
| Beaver, | 1 | 250 | 55 | 32,000 00 | 4,000.000 |
| Delaware, | 1 | 357 | 90 | . . | 1,200,000 |
| Philadelphia, | 5 | 302 | 815 | 478,660 54 | 35,248,468 |
|  | 14 | 290 | 3,234 | $2,089,614 76 | 131,918,829 |

# BESSEMER STEEL.

| NAME OF WORKS. | Number of converters. | Capacity of converters, in tons. | Number of iron cupolas. | Number of speigel cupolas. | Number of open-hearth furnaces. | Number of other furnaces. | Number of trains of rolls. | Number of days in operation during the year. | Number of persons employed. | Total amount paid in wages during the year. | PRODUCT. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Steel rails, gross tons. | Steel in other forms, gross tons. | Total product, gross tons. |
| Edgar Thomas Steel Works, | 3 | 10 | 5 | 4 | .... | ... | 2 | 273 | 1,350 | $1,303,079 43 | 143 561.00 | 1,242.10 | 144,803.10 |
| Cambria Iron Company, | 2 | 7 | 5 | 4 | 2 | ... | 2 | 300 | 2,050 | 1,202 631 00 | 114,700 00 | 27,500.00 | 142,200.00 |
| Pennsylvania Steel Company, | 3 | 7 | 4 | 4 | 2 | . | 2 | 285 | 1,100 | 740.000 00 | 126,512.00 | 9,607.00 | 136 119.00 |
| Bethlehem Iron Company, | 4 | 7 | 8 | 4 | .. | 9 | 5 | 288 | 2,000 | 1,126,135 83 | 123.308.09 | 20,367.00 | 143,675.09 |
| Lackawanna Iron and Steel Company, | 3 | 5 | 4 | 4 | .. | . | 2 | | | | | | |
| | 15 | 7¼ | 26 | 20 | 4 | 0 | 11 | 286½ | 6,500 | $4,371,846 26 | 508,081.09 | 58,716.10 | 566,797.19 |

The above classification applies to the manufacture of steel only, the product. etc., of blast furnaces and iron rolling-mills operated by them, are embodied in the tables under their respective heads. The Lackawanna Iron and Steel Company, Scranton Steel Company, and the Pittsburgh Bessemer Steel Company having failed to report, makes our table of the total output of the State to that extent incomplete.

# IRON FOUNDRIES.

**TABLE** *showing the number of Iron Foundries, the production, etc., in the several counties of Pennsylvania, compiled from returns made to the Bureau, for the year ended December 31, 1882.*

| COUNTY. | Number of establishments. | Average number of days in operation. | Number of persons employed. | Number and average capacity of cupolas, in tons. | Number of tons of iron castings. | Number of pounds of brass castings. | Total amount paid in wages during the year. |
|---|---|---|---|---|---|---|---|
| Allegheny, | 23 | 296 | 1,350 | 30— 9½ | 29,306 | 205,000 | $842,404 78 |
| Armstrong, | 2 | 280 | 9 | 2— 2½ | 358 | 6,000 | 3,575 00 |
| Beaver, | 2 | 191 | 23 | 2— 2½ | 300 | . . | 6.877 79 |
| Bedford, | 4 | 247 | 26 | 3— 3 | 239 | 1.200 | 7,860 00 |
| Berks, | 8 | 287 | 723 | 13— 8 | 8,874 | 17,500 | 278,193 95 |
| Blair, | 3 | 289 | 84 | 4— 8 | 3,100 | 15,000 | 43,728 00 |
| Bucks, | 1 | 300 | 1 | 1— ¾ | 25 | . . . . . . . | 795 00 |
| Butler, | 1 | 290 | 3 | 1 | 100 | . . . | 1,200 00 |
| Cameron, | 1 | 310 | 3 | 1 | 26 | 150 | 1,000 00 |
| Carbon, | 1 | 300 | 56 | 2— 7½ | 1,000 | . . . . . . | 24,000 00 |
| Centre, | 3 | 194 | 36 | 3 | 380 | . . . . | 1.250 00 |
| Chester, | 2 | 254 | 45 | 2— 3½ | 225 | 1,500 | 16,050 00 |
| Clarion, | 2 | 265 | 12 | 2— 2 | 77 | . . . . | 3,150 00 |
| Clearfield, | 2 | 155 | 6 | 1 | 52 | 10 | 100 00 |
| Clinton, | 2 | 312 | 80 | 4— 7 | 3,300 | 365,000 | 45,934 00 |
| Columbia, | 2 | 260 | 2 | 2— 2 | 53 | . . | 484 00 |
| Crawford, | 5 | 259 | 453 | 7— 9 | 2,362 | 30,422 | 188.263 00 |
| Cumberland, | 1 | 300 | 38 | 1— 3 | 300 | . . | 13,000 00 |
| Dauphin, | 3 | 292 | 359 | 4— 9 | 1,470 | 12,000 | 82 700 00 |
| Delaware, | 3 | 307 | 86 | 4— 6 | 1,560 | 79.878 | 44.504 45 |
| Elk, | 1 | 309 | 11 | 1— 3 | 60 | 600 | 4 873 00 |
| Erie, | 7 | 302 | 623 | 7—11 | 10,866 | 21,600 | 360,556 22 |
| Fayette, | 1 | 234 | 10 | 1— 2 | | | |
| Indiana, | 3 | 280 | 12 | 3— 1 | 238 | . . . | 4.800 00 |
| Lackawanna, | 3 | 260 | 85 | 8— 3 | 4,389 | 84,000 | 64 746 75 |
| Lancaster, | 7 | 277 | 96 | 6— 3 | 622 | 6,300 | 30,741 00 |
| Lawrence, | 1 | 300 | 25 | 2— 5 | 250 | 3,000 | 11,000 00 |
| Lebanon, | 3 | 285 | 479 | 5— 8 | 3,699 | 4.000 | 179.308 44 |
| Lehigh, | 6 | 301 | 523 | 11—12 | 17,388 | . . | 197,447 89 |
| Luzerne, | 5 | 270 | 142 | 6— 4 | 1,260 | 11,000 | 51 600 00 |
| Lycoming, | 1 | 300 | 30 | 1— 4 | 1,000 | 20.000 | 13 000 00 |
| Mercer, | 2 | 275 | 34 | 3— 9 | 1,475 | 6,000 | 16 200 00 |
| Mifflin, | 1 | 260 | 6 | 1 | 40 | . . . | 1,900 00 |
| Monroe, | 1 | 312 | 13 | 1— 2 | 150 | 1,250 | 5,500 00 |
| Montgomery, | 2 | 309 | 64 | 2— 5 | 1,040 | 8,800 | 35,729 28 |
| Montour, | 2 | 310 | 183 | 2—10 | 3.195 | 12,000 | 85,810 80 |
| Northampton, | 4 | 292 | 144 | 5— 3 | 2,669 | 227,016 | 64,457 00 |
| Northumberland, | 3 | 287 | 27 | 2— 2 | 390 | 450 | 8,550 00 |
| Perry, | 3 | 219 | 12 | 3— 2 | 105 | . . . | 1,550 00 |
| Philadelphia, | 9 | 303 | 1,259 | 13—11 | 13,118 | 20.000 | 700,116 04 |
| Potter, | 1 | 104 | 2 | 1— 1 | 20 | 100 | 300 00 |
| Schuylkill, | 6 | 302 | 794 | 12— 6 | 4,294 | 15 222 | 294,424 52 |
| Somerset, | 4 | 214 | 25 | 4— 2 | 110 | 1,800 | 3,330 00 |
| Tioga, | 3 | 257 | 84 | 5— 9 | 777 | 15,916 | 41,815 92 |
| Union, | 2 | 287 | 68 | 2— 4 | 385 | 2,500 | 22 304 00 |
| Warren, | 1 | 250 | 101 | 2 | 1,050 | 1,500 | 60,700 00 |
| Wyoming, | 1 | 300 | 2 | 1— 1 | 20 | . . . . . | 1,200 00 |
| York, | 4 | 288 | 305 | 7— 7 | 6,900 | . . . | 113,086 00 |
| Total, | 158 | 273 | 8,454 | 206— 5 | 128,617 | 1,196,714 | $3 980,116 83 |
| **Stoves.** | | | | | | | |
| Allegheny, | 3 | 277 | 187 | 3— 9 | 3,600 | . . . . . . . | $114.068 00 |
| Beaver, | 1 | 250 | 22 | 1— 2 | 625 | . . . . . . . | 17.000 00 |
| Berks, | 2 | 267 | 362 | 3—15 | 4,805 | . . . . . . . | 157,258 14 |
| Lackawanna, | 1 | 290 | 119 | 2—13 | 1,181 | . . . . . | 48.520 90 |
| Luzerne, | 1 | 303 | 80 | 2—12 | 1,200 | . . . . . . . | 38,000 00 |
| Northampton, | 1 | 295 | 36 | 1— 6 | 574 | . . . . . . . | 17,630 16 |
| Philadelphia, | 6 | 286 | 547 | 5—13 | 7,320 | . . . . . . . | 322,044 02 |
| Schuylkill, | 1 | 72 | 5 | 1— 3 | 10 | . . . . . . | 450 00 |
| Total, | 16 | 255 | 1,358 | 18— 9 | 19,315 | . . . . . . . | $714,971 22 |

# GLASS.

**TABLE** *showing the number of Glass Works, the production, &c., in the several counties of Pennsylvania, compiled from returns to the Bureau, for the year ended December 31, 1882.*

| COUNTY. | Number of furnaces. | Number of pots. | Average number of days in operation. | Number of persons employed. | Total amount paid in wages during the year. | Number of boxes (50 feet) manufactured. | Value of product. |
|---|---|---|---|---|---|---|---|
| *Window.* | | | | | | | |
| Allegheny, | 18 | 172 | 259 | 1,024 | $802,970 00 | 588,924 | |
| Fayette, | 5 | 46 | 258 | 348 | 238,653 15 | 136,000 | |
| Lawrence, | 1 | 10 | 160 | 117 | 50,559 75 | 28,670 | |
| Montgomery, | 1 | 8 | 270 | 59 | 35,000 00 | 15,000 | |
| Tioga, | 1 | 8 | 200 | 45 | 25,000 00 | 28,000 | |
| Total, | 26 | 244 | 229 | 1,593 | $1,152,182 90 | 796,594 | |
| *Flint.* | | | | | | | |
| Allegheny, | 43 | 460 | 250 | 3,828 | $1,579,732 45 | . . . . . | $3,564,265 39 |
| Beaver, | 6 | 62 | 305 | 520 | 234,200 00 | . . . . | 645,708 30 |
| Philadelphia, | 8 | 73 | 257 | 1,155 | 490,832 57 | . . . . | 1,039,094 02 |
| Wayne, | 2 | 9 | 75 | 309 | 97,306 06 | . . . . . | 180,812 50 |
| Total, | 59 | 604 | 272 | 5,812 | $2,402,071 08 | . . . . . | $5,429,880 21 |
| *Green.* | | | | | | | |
| Allegheny, | 1 | 8 | 300 | 75 | $35,000 00 | . . . . . | $80,000 00 |
| Monroe, | 1 | 5 | 210 | 90 | 40,000 00 | . . . . | 70,000 00 |
| Philadelphia, | 1 | 8 | 236 | 100 | 51,646 00 | . . . . . | 93,000 00 |
| Total, | 3 | 21 | 249 | 265 | $126,646 00 | . . . . . | $243,000 00 |

# LUMBER.

**A TABLE** *showing the number of mills, production, etc., of lumber in the several counties as compiled from reports to the Bureau for the year ended December 31, 1882.*

| COUNTY. | Number of mills. | Number of persons employed. | Average number of days in operation during the year. | Total amount paid in wages during the year. | White pine—feet. | Hemlock—feet. | Cherry—feet. | Ash—feet. | Chestnut—feet. | Walnut—feet. | Oak—feet. | Other lumber—feet. | Shingles—thousands. | Lath—thousands. | Staves and headings—thousands. | Pickets—thousands. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Allegheny, | 6 | 87 | 134 | $23 824 00 | 2,250,000 | 698,000 | 3,200 | 1,560 | 1,200 | 91,074 | 938,857 | 2,000 | 150,000 | 2 200,000 | . . . . . | 100,000 |
| Armstrong, | 10 | 72 | 95 | 25,893 93 | 2,128,800 | 72,800 | . | 600 | 22 200 | 11,890 | 559.988 | 89,800 | 225,000 | 762 000 | . . . | 64.000 |
| Cambria, | 7 | 98 | 185 | 29,903 00 | 745,000 | 3,825,000 | 507,000 | 80,000 | 11.200 | . . | 55,580 | 250.000 | 2,819,000 | 410,500 | 24,000 | 17,000 |
| Cameron, | 4 | 130 | 180 | 22,117 99 | 5,696,641 | 5,926.231 | 200,000 | 50,000 | 25,000 | . . . | 423 786 | 25,000 | . | 1,977 250 | . . . . | 88,420 |
| Centre, | 5 | 331 | 250 | 162,290 00 | 12,074,112 | 5,191,211 | . . . . . | 3,800 | . . . . | . . . | 739,866 | 969,834 | 8,593,000 | 5 850 000 | . | 378,000 |
| Clarion, | 3 | 77 | 196 | 19.250 00 | 7,500,000 | 1,250,000 | . . . . | . . . | . . | . . . | 350,000 | 75,000 | 675,000 | 600,000 | 50,000 | |
| Clearfield, | 4 | 167 | 260 | 80 899 31 | 8,324,841 | 11,776.456 | . . | | 50,000 | . . . . | 461,009 | 11,274 | 1,774,050 | 3,739,200 | . . | 236,125 |
| Clinton, | 5 | 274 | 204 | 76.250 00 | 22,572,846 | 6 553,974 | 110,775 | 1,930 | 89,754 | . | 130.435 | 10,143,248 | 4.500.000 | 4,000,000 | . | 100,000 |
| Crawford, | 9 | 99 | 167 | 25,370 60 | 1,125 000 | 3,095.500 | 66,500 | 138 800 | 104,523 | 3,300 | 1 430.000 | 2,060,000 | 1.680,000 | 900,000 | 1,100.000 | 5,000 |
| Dauphin, | 4 | 68 | 212 | 22,500 00 | 2,542,000 | 1,263,583 | . | 523 | 530 | 335 | 2,611 360 | 95,868 | 2,851.400 | 158,000 | 30,000 | 42 125 |
| Elk, | 3 | 278 | 308 | . . | 4,800,000 | 6,200,000 | 300,000 | 50,000 | 100,000 | . . . . | 1,150,000 | . . . . . | 500,000 | 1,000,000 | | 200,000 |
| Erie, | 2 | 28 | 246 | 1,500 00 | . | 1,000,000 | . . . . . | 10,000 | 100,000 | . . . | 25,000 | . . . . | . | | 400 000 | |
| Forest, | 4 | 59 | 177 | 7,550 00 | 8,300,000 | 1,400,000 | . . . . . | | . . . . | . . . | 400,000 | . . . | 2,100.000 | 2,000,000 | . . . | 130,000 |
| Indiana, | 3 | 24 | 210 | 3,668 00 | 400,000 | 380,000 | . . . . | 2,000 | . . . . . | . . . | 50,000 | 2,000 | 100,000 | 225,000 | | |
| Jefferson, | 2 | 23 | 204 | 6,100 00 | 3 350,100 | 2,200,030 | . . . . | | . . | . . . | . . | . . | . . . . . . | 1,118 000 | | |
| Lackawanna, | 5 | 15 | 129 | 5,069 00 | 42 260 | 197,512 | . . | 4,000 | 7,000 | . . . | 52 317 | 803,200 | . . | 10,000 | | |
| Lycoming, | 19 | 1,030 | 159 | 372 863 55 | 130,896,041 | 25,522,902 | 1,112 | 467 | 62,323 | . . . . | 695,228 | 1,415,270 | 4,022,900 | 42,586,250 | 700,000 | 2,688,950 |
| Monroe, | 1 | 10 | 240 | 3,000 00 | | 1,000,000 | . | | . . . . | . . . | . | 100.000 | 100,000 | 100,000 | | |
| McKean, | 6 | 102 | 180 | 40,000 00 | 1,900,000 | 22,400,000 | 200,000 | 100,000 | . . . . | . . . . | 300,000 | 100.000 | 400,000 | 600 000 | | |
| Northumberland, | 2 | 53 | 183 | 15.994 04 | 4,926,745 | 952.732 | . . | | . . . | . . . . | 519,464 | 17.618 | 777,070 | 1 160,550 | . . . . . | 93,956 |
| Potter, | 4 | 28 | 162 | 5,816 50 | 125,000 | 505,934 | 9,000 | 17,000 | 10,000 | . . . | 4 000 | 28 000 | 4,853,000 | | | |
| Snyder, | 1 | 8 | 96 | 1,050 00 | 30,000 | | . | | . | . . . | 270,000 | | | | | |
| Sullivan, | 7 | 32 | 148 | 3,993 00 | 20,000 | 4,772,738 | 2,751 | 107,926 | 21,000 | . . . | 30,000 | 707.373 | . . . . | 76,100 | | |
| Susquehanna, | 1 | 4 | 96 | 550 00 | 6 000 | 300,000 | . | 3,000 | . . | . . . | . . | 25.000 | | | | |
| Warren, | 35 | 489 | 160 | 102,692 96 | 12,136 434 | 19,611 785 | 118,000 | 205,000 | 692,000 | . . . | 803.762 | 1,651,761 | 7,050,000 | 2,918,100 | 704,000 | |
| Washington, | 2 | 24 | 183 | 720 00 | 200,000 | 125,000 | . . . . . | . . . . | . | . . . | 122,500 | | | | | |
| Wyoming, | 1 | 2 | 180 | 310 00 | 10,000 | 225,000 | . . . . | . . . . | 5,000 | . . . | . . | . . . . . . | . . | 150.000 | | |
| York, | 2 | 44 | 300 | 11,600 00 | 2,500,000 | 500,000 | . . . . . | . . . . | 40,000 | . . . | 200,000 | . . . . . | 200,000 | 800,000 | . . . . . | 50,000 |
| | 156 | 3,656 | 187 | $1,070,775 88 | 234,601,823 | 126,946,388 | 1,518,338 | 776,606 | 1,341,730 | 106 599 | 12,323,152 | 18,572,246 | 43,370,420 | 73,340,950 | 3,008,000 | 4,193,576 |

Articles manufactured in the lumber business not enumerated in the above table.

Barges. 70; boat bottoms, 16; roofing lath, (thousands,) 100,000; bed slats, (thousands,) 118,000; pailing, (feet,) 3,848; kindling wood, (cords,) 6,160; pine timber, (cubic feet,) 150,000; oak timber, (cubic feet,) 30,000.

# TANNERIES.

**TABLE** *showing the number of Tanneries, the production, etc., in the several counties of Pennsylvania, compiled from returns made to the Bureau for the year ended December 31, 1882.*

| COUNTY. | Number of establishments. | Average number of days in operation. | Number of persons employed. | Total amount paid in wages during the year. | Value of product manufactured. |
|---|---|---|---|---|---|
| Adams, | 2 | 312 | 7 | $2,230 00 | $20,500 00 |
| Allegheny, | 9 | 309 | 160 | 85,500 76 | 955,500 00 |
| Armstrong, | 5 | 284 | 16 | 6,750 00 | 33 000 00 |
| Beaver, | 2 | 250 | 4 | 1,300 00 | 4,000 00 |
| Bedford, | 8 | 276 | 132 | 46 700 00 | 1,061,620 00 |
| Berks, | 10 | 301 | 102 | 24,420 00 | 193,478 00 |
| Blair, | 6 | 306 | 52 | 26 164 00 | 324,500 00 |
| Bradford, | 7 | 301 | 128 | 55,000 00 | 718,000 00 |
| Bucks, | 6 | 302 | 12 | 3,040 00 | 21,500 00 |
| Butler, | 2 | 158 | 5 | 2 000 00 | 5,000 00 |
| Cambria, | 2 | 305 | 7 | 2,700 00 | 19,800 00 |
| Cameron, | 2 | 300 | 157 | 47,500 00 | 500,000 00 |
| Carbon, | 1 | 312 | 6 | 2 300 00 | 10,000 00 |
| Centre, | 1 | 310 | 45 | 20,805 00 | 340,000 00 |
| Chester, | 3 | 308 | 13 | 3,900 00 | 53 000 00 |
| Clarion, | 2 | 232 | 4 | 500 00 | 4,300 00 |
| Clearfield, | 3 | 220 | 91 | 13,000 00 | 775,400 00 |
| Clinton, | 2 | 311 | 74 | 31,609 60 | 596,800 00 |
| Columbia, | 4 | 309 | 12 | 4,600 00 | 46,500 00 |
| Crawford, | 5 | 280 | 42 | 19,674 00 | 168,500 00 |
| Cumberland, | 11 | 293 | 50 | 11,966 35 | 150,944 95 |
| Dauphin, | 8 | 294 | 65 | 21,843 95 | 136,741 98 |
| Elk, | 4 | 302 | 214 | 89,000 00 | 1,205,000 00 |
| Erie, | 9 | 305 | 76 | 28,515 66 | 261,323 00 |
| Fayette, | 4 | 283 | 19 | 6,300 00 | 46,809 00 |
| Forest, | 1 | 180 | 26 | 16,498 26 | 130,000 00 |
| Franklin, | 4 | 305 | 15 | 2,835 00 | 55,100 00 |
| Fulton, | 3 | 279 | 14 | 3,800 00 | 71,000 00 |
| Greene, | 1 | 300 | 1 | 300 00 | 1,000 00 |
| Huntingdon, | 5 | 296 | 112 | 41,592 11 | 527,245 42 |
| Indiana, | 1 | 208 | 1 | 200 00 | 600 00 |
| Jefferson, | 5 | 264 | 9 | 2,225 00 | 9,950 00 |
| Juniata, | 4 | 266 | 17 | 5,000 00 | 84,250 00 |
| Lackawanna, | 2 | 305 | 54 | 20,482 00 | 176,450 00 |
| Lancaster, | 9 | 304 | 50 | 17,555 00 | 130,936 00 |
| Lebanon, | 3 | 267 | 17 | 4,830 00 | 40,372 00 |
| Lehigh, | 8 | 297 | 27 | 7,235 00 | 72,500 00 |
| Luzerne, | 4 | 306 | 38 | 7,904 00 | 95,000 00 |
| Lycoming, | 13 | 274 | 246 | 103,600 00 | 1,257,000 00 |
| McKean, | 1 | 310 | 46 | 21,000 00 | 200,000 00 |
| Mercer, | 1 | 312 | 3 | 1,200 00 | 5,000 00 |
| Mifflin, | 3 | 287 | 24 | 7,800 00 | 141,000 00 |
| Monroe, | 1 | 310 | 54 | 22,000 00 | 200,000 00 |
| Montgomery, | 4 | 300 | 16 | 3,872 00 | 32,200 00 |
| Montour, | 1 | 300 | 2 | 300 00 | 4,000 00 |
| Northampton, | 5 | 309 | 18 | 7,625 00 | 77,200 00 |
| Northumberland, | 4 | 303 | 51 | 20,388 00 | 271,096 00 |
| Perry, | 3 | 283 | 35 | 11,900 00 | 228,600 00 |
| Philadelphia, | 51 | 303 | 1,965 | 1,084,493 78 | 5,947,433 81 |
| Potter, | 1 | 300 | 115 | 104,100 00 | 1,710.000 00 |
| Schuylkill, | 5 | 309 | 25 | 10,570 00 | 84 318 00 |
| Snyder, | 3 | 156 | 8 | 1,925 00 | 43,800 00 |
| Somerset, | 6 | 198 | 8 | 750 00 | 4,150 00 |
| Sullivan, | 3 | 311 | 182 | 65,716 80 | 145,000 00 |
| Susquehanna, | 10 | 291 | 214 | 79,618 00 | 767,255 00 |
| Tioga, | 11 | 290 | 317 | 154,904 00 | 1,604,600 00 |
| Union, | 2 | 306 | 10 | 1,900 00 | 19,000 00 |
| Venango, | 1 | 250 | 1 | . . . | 250 00 |
| Warren, | 6 | 295 | 335 | 139,781 00 | 1,148,700 00 |
| Washington, | 2 | 234 | 7 | 1,900 00 | 15,500 00 |
| Wayne, | 5 | 298 | 62 | 23 833 50 | 302,000 00 |
| Westmoreland, | 9 | 301 | 19 | 5,300 00 | 33,600 00 |
| Wyoming, | 4 | 308 | 117 | 56,462 10 | 255,000 00 |
| York, | 10 | 288 | 41 | 14,830 00 | 182,500 00 |
| Total, | 333 | 299 | 5,795 | $2,633,544 87 | $23,735,814 16 |

# TEXTILE FABRICS.

**A TABLE** *showing the number of mills, production, &c., of Textile Fabrics in the several counties, as compiled from reports to the Bureau, for the year ended December 31, 1882.*

(Product marked thus (*) is transferred from other class of goods in the same county.)

| COUNTY. | Number of mills. | Average number of days in operation during the year. | Number of persons employed. | Total amount paid in wages during the year. | Number of spindles. | Number of looms. | Yards. | Pieces. | Pounds. |
|---|---|---|---|---|---|---|---|---|---|
| **Carpets.** | | | | | | | | | |
| Lancaster, | .... | ... | ...... | ....... | | ... | *1,740 | .... | ...... |
| Philadelphia, | 108 | 290 | 9,500 | $3,453,694 97 | 36,519 | 4,773 | 21,124,326 | 10,254 | |
| York, | 1 | 290 | 898 | 30,000 00 | ...... | 70 | 225,000 | | |
| **Cotton Goods.** | | | | | | | | | |
| Allegheny, | 1 | 296 | 262 | 58,737 35 | 8,844 | 229 | .. | ........ | 1,125,371 |
| Berks, | 1 | 273 | 230 | 47,211 00 | 15 800 | 300 | 2,307,000 | | |
| Chester, | 1 | 276 | 46 | 12,000 00 | 1,512 | 56 | 515,200 | | |
| Dauphin, | 1 | 225 | 394 | 39,577 97 | 8,320 | 269 | ... | ......... | 720,000 |
| Delaware, | 11 | 271 | 2,165 | 669,907 76 | 100,698 | 2,323 | 25,525,162 | | |
| Lancaster, | 5 | 308 | 1,379 | 337,918 40 | 42,772 | 1,156 | 12,133,878 | | |
| Montgomery, | 4 | 284 | 477 | 116,792 35 | 21,160 | 555 | 4,745,761 | | |
| Northampton, | 1 | 300 | 250 | 45,000 00 | 8,000 | 284 | 2 000,000 | | |
| Philadelphia, | 43 | 285 | 4,966 | 1,551,039 02 | 51,010 | 7,116 | 77,990,112 | 81,966 | 2,000,000 |
| **Cotton and Woolen Goods.** | | | | | | | | | |
| Bedford, | 1 | 300 | 12 | 2 000 00 | 240 | 6 | 9,359 | | |
| Berks, | 2 | 269 | 120 | 37,545 57 | 2,212 | 101 | 353,953 | | |
| Chester, | 1 | 302 | 27 | 8,500 00 | 800 | 20 | 150,000 | | |
| Delaware, | 13 | 264 | 1,248 | 371,275 46 | 34,052 | 1,269 | 8,273 407 | | |
| Montgomery, | 2 | 259 | 196 | 53,027 91 | 4,155 | 244 | 1 313 957 | | |
| Philadelphia, | 23 | 292 | 4,315 | 1,348,248 73 | 48,849 | 4,339 | 30,873,889 | 59,009 | |
| **Woolen Goods.** | | | | | | | | | |
| Allegheny, | 1 | 260 | 54 | 18,000 00 | 1,080 | 12 | ....... | .......... | 140,000 |
| Armstrong, | 4 | 218 | 137 | 25,512 57 | 2,592 | 60 | 454,400 | | |
| Beaver, | 1 | 250 | 11 | 1,500 00 | 544 | 8 | ....... | 400 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Bedford, | 1 | 300 | 17 | 5,000 00 | 240 | 7 | 16 817 | | |
| Berks, | 1 | 290 | 51 | 11,627 04 | 1.344 | 28 | 140,752 | | |
| Bradford, | 2 | 225 | 26 | 7,876 00 | 591 | 9 | 16 982 | | |
| Cambria, | 1 | 306 | 226 | 69 164 20 | 4,224 | 74 | 285,773 | | |
| Chester, | 2 | 307 | 138 | 37,000 00 | 1,449 | 66 | 600,000 | | |
| Clinton, | 1 | 256 | 12 | 1,450 00 | 312 | 6 | | 400 | |
| Columbia, | 1 | 150 | 4 | 400 00 | 360 | 3 | 500 | | |
| Crawford, | 1 | 308 | 4 | 600 00 | 200 | 3 | 3 800 | | |
| Delaware, | 4 | 303 | 395 | 135 240 64 | 9,717 | 195 | 321,175 | | |
| Erie, | 2 | 217 | 19 | 2,400 00 | 440 | 6 | 10,000 | | |
| Franklin, | 2 | 294 | 113 | 35,414 00 | 1,938 | 27 | 87,420 | | |
| Fulton, | 2 | 150 | 5 | 350 00 | 352 | 6 | 600 | | |
| Huntingdon, | 1 | 231 | 7 | 1,000 00 | 234 | 5 | 3,000 | | |
| Indiana, | 1 | 308 | 23 | 5,000 00 | 240 | 5 | 40,000 | | |
| Lackawanna, | 1 | 250 | 8 | 800 00 | 240 | 2 | 10,000 | | |
| Lancaster, | 1 | 300 | 6 | 250 00 | 280 | 6 | 1,000 | | |
| Lycoming, | 2 | 250 | 66 | 17,000 00 | 2 224 | 20 | 18 000 | | 35 000 |
| Mifflin, | 1 | 260 | 51 | 7.361 74 | 740 | 4 | 3,045 | | |
| Monroe, | 1 | 300 | 130 | 2 500 00 | 1 600 | 25 | 120.000 | | |
| Montgomery, | 4 | 292 | 672 | 205,000 00 | 15 696 | 262 | 995,000 | | |
| Philadelphia, | 16 | 300 | 4,269 | 1,412,639 53 | 30,820 | 2,038 | 60,455,229 | 10,000 | 2,666,830 |
| Sullivan, | 1 | 200 | 5 | 700 00 | 240 | 2 | 2,000 | | |
| Tioga, | 1 | 250 | 4 | 280 00 | 220 | 3 | 3,500 | | |
| Union, | 1 | 302 | 53 | 14.670 22 | 2 256 | 18 | 54 920 | | |
| Warren, | 1 | 277 | 12 | 3,000 00 | 280 | 7 | 15,710 | | |
| **Yarns.** | | | | | | | | | |
| Allegheny, | 3 | 220 | 474 | 81,969 90 | 15 000 | 276 | | | 1,483,055 |
| Armstrong, | 1 | 90 | 8 | 450 00 | 160 | | | | 40.250 |
| Bedford, | | | | | | | | | *17.222 |
| Bradford, | | | | | | | | | *2,500 |
| Bucks, | 2 | 252 | 343 | 86,496 39 | 7.786 | | | | 825 616 |
| Chester, | 1 | 308 | 110 | 36,400 00 | 2,352 | | | | 210 000 |
| Clinton, | | | | | | | | | *7,000 |
| Columbia, | | | | | | | | | *3 000 |
| Crawford, | | | | | | | | | *1,200 |
| Delaware, | 15 | 241 | 1,032 | 242,089 21 | 59,248 | 120 | | | 5,206,830 |
| Erie, | | | | | | | | | *6,000 |
| Franklin, | | | | | | | | | *7 000 |
| Fulton, | | | | | | | | | *3 000 |
| Huntingdon, | | | | | | | | | *2 000 |
| Indiana, | | | | | | | | | *3 000 |
| Lackawanna, | | | | | | | | | *5,000 |
| Lancaster, | 1 | 309 | 85 | 16,800 00 | 5,500 | | | | 464,700 |
| Mifflin, | | | | | | | | | *77,060 |
| Montgomery, | 6 | 257 | 706 | 157,974 00 | 33.180 | 415 | | | 3 990,422 |
| Philadelphia, | 65 | 286 | 4,288 | 1 276 800 84 | 189,508 | 15 | | | 27,659 594 |
| Sullivan, | | | | | | | | | *1 500 |
| Tioga, | | | | | | | | | *300 |
| Warren, | | | | | | | | | *6 000 |

## TEXTILE FABRICS—Continued.

| COUNTY. | Number of mills. | Average number of days in operation during the year. | Number of persons employed. | Total amount paid in wages during the year. | Number of spindles. | Number of looms. | Yards. | Pieces. | Pounds. |
|---|---|---|---|---|---|---|---|---|---|
| **Silk and Silk Mixed Goods.** | | | | | | | | | |
| Lehigh, | 1 | 278 | 475 | $65,000 00 | 15,000 | 120 | 80 000 | . . | 80,000 |
| Philadelphia, | 27 | 291 | 3,424 | 1,028,149 26 | 15,924 | 1,401 | 671,740 | 6,493,000 | 20,700 |
| Wayne, | 1 | 300 | 336 | 100,000 00 | 20,000 | 120 | | | |
| **Hosiery and Knit Goods.** | | | | | | | | | |
| Allegheny, | 1 | 300 | 30 | . . . | . . . | . . | . . . . . . . . | Doz. 3,879 | |
| Bucks, | 2 | 299 | 344 | 88,350 00 | 1,620 | 430 | . . . . . | Doz. 293,000 | |
| Delaware, | 1 | 300 | 65 | 18,062 74 | . . . . | . . . . | . . . . . . | Doz. 91,836 | |
| Indiana, | . . . | . . . | . . . . | . . . | . . | . . . . | . . . . . . . . | Doz. *500 | |
| Luzerne, | 1 | 270 | 200 | 43,863 41 | 960 | . . . | . . . . . . . | Doz. 20,295 | |
| Mifflin, | . . . | . . | . . . . | . | . . | . . | . . . . | Doz. *10,008 | |
| Philadelphia, | 83 | 271 | 9,503 | 2,104,656 37 | 12,256 | 202 | 15,000 | Doz. 5,630,835 | |
| **Bleaching, Dyeing, Finishing, and Print-Works.** | | | | | | | | | |
| Montgomery, | 1 | 308 | 200 | 51,955 25 | . . . . . | . . . . . | 13,016,905 | | |
| Philadelphia. | 19 | 282 | 1,077 | 473,037 24 | . . . . . | . . . . | 26,691,289 | . . . . . . . . | 2,440 000 |
| **Hats.** | | | | | | | | | |
| Berks, (wool,) | 13 | 253 | 849 | 185,246 97 | . . . . . | . . . . . | . . . . . . | Doz. 228 364 | |
| Lancaster, (wool,) | 2 | 225 | 80 | 13,000 00 | . . . . . | . . . | . . . . . . | Doz. 12,000 | |
| Philadelphia, (fine soft, etc.,) | 1 | 310 | 681 | 340,010 82 | . . . . . | . . . . . | . . . . . . . | Doz. 30,992 | |

## RECAPITULATION.

| INDUSTRIES. | Number of mills. | Number of persons employed. | Total amount paid in wages during the year. | Number of spindles. | Number of looms. | Yards. | Pieces. | Pounds. |
|---|---|---|---|---|---|---|---|---|
| Carpets, | 109 | 10,398 | $3,483,694 97 | 36.519 | 4 843 | 21,351,066 | 10.254 | |
| Cotton goods, | 68 | 10,169 | 2,878.183 85 | 258 116 | 12.288 | 125,217.113 | 81 966 | 3 845,371 |
| Cotton and woolen goods, | 42 | 5.918 | 1.820,597 67 | 90.308 | 5,979 | 40,974,565 | 59 009 | |
| Woolen goods, | 58 | 6,518 | 2 021,735 94 | 80.444 | 2,907 | 63,659.623 | 10 800 | 2,841 830 |
| Yarns, | 94 | 7,046 | 1,898 980 34 | 312,734 | 828 | . | . . . . . . | 40,022 249 |
| Silk and silk mixed goods, | 29 | 4,235 | 1,193,149 26 | 50,924 | 1,641 | 751,740 | 6 493,000 | 100,700 |
| Hosiery and knit goods, | 88 | 10,142 | 2 254,932 52 | 14 836 | 632 | 15,000 | Doz. 6 050 953 | |
| Bleaching, dyeing, etc., | 20 | 1,277 | 524.992 49 | . . | . . . | 39,708,194 | | 2 440,000 |
| Hats, (wool,) | 15 | 929 | 198.246 97 | . . . . . . | . . . . . | . . . . | Doz. 240 364 | |
| Hats, (fine soft, etc.,) | 1 | 681 | 340,019 82 | . . . . | . . . . . | . | Doz. 30,992 | |
| | 524 | 57,313 | $16,614,533 83 | 843 881 | 29,116 | 291,677,301 | Pieces, 6,655,029 | 49,250,150 |

*The following table shows the class of goods manufactured, and the number of machines used in their manufacture, not included in the above:*

| *Product.* | |
|---|---|
| Carpets, (not otherwise classified,) | $600,000 00 |
| Mats and rugs, dozen, | 83 120 |
| Cotton goods, (not otherwise classified,) | $180.000 00 |
| Turkish towels, dozen, | 70,724 |
| Balmoral skirts, dozen, | 12.960 |
| Quilts, | 171,290 |
| Quilts, cases, | 46 |
| Cotton and woolen goods, (not otherwise classified,) | $103,500 00 |
| Quilts, shawls, and table covers, | 195,000 |
| Woolen goods—blankets, pair, | 81,131 |
| Shawls, | 1,173,334 |
| Shawls, cases, | 35 |
| Cases, | 617 |
| Woolen goods—coverlets and quilts. | 79,150 |
| Wool used in making, pounds, | 10.000 |
| Braid, pounds, | 78,833 |
| Silk and silk mixed goods, (not otherwise classified,) | $615.000 00 |
| Tapes and binding. gross, | 100,000 |
| Elastic goods, dozen, | 850 |
| Silk, cotton, and worsted used in making, pounds, | 53,000 |
| Hosiery and knit goods—fancy shawls. | 11.150 |
| Yarn used in making. pounds, | 210,000 |
| Yarns and warps, bleached, dyed, and finished, (not otherwise classified,) | $747,733 23 |
| Cotton and woolen goods. dyed and printed, (not otherwise classified,) | $280.000 00 |

| *Machines.* | |
|---|---|
| Cards, | 2,433 |
| Pickers and willows, | 169 |
| Frames—spinning, spooling, winding, etc., | 1.254 |
| Self-acting mules, | 111 |
| Reels and twisters, | 288 |
| Warp-mills, | 114 |
| Feeding and lapping machines, | 48 |
| Silk machines, braiding, crimping, fringing, weaving, etc., | 634 |
| Sewing machines, | 505 |
| Machines—knitting, hosiery, underwear, etc., | 4,985 |
| Other frames and machines, | 2,637 |

# THE TEXTILE INDUSTRIES OF PHILADELPHIA AND EASTERN PENNSYLVANIA.

By LORIN BLODGET.

The textile industries of Philadelphia and the vicinity have been especially prosperous during the last ten or twelve years, and have taken a position in advance of all others, as a class, especially in the employment of a relatively greater number of persons in the towns and cities where they are located, and in the creation of a greater social interest, and the building up of cities and towns where they are located. The force of this position has been strikingly shown by their progress in Philadelphia, and the rapid growth and great actual wealth of Kensington, Germantown, Manyunk, and other of the former suburbs are due chiefly to the textile industries. At least two hundred and fifty thousand of the present population of these northern wards of the city find direct or indirect maintenance from this source. By the municipal census of industries of Philadelphia just completed, it appears that the number of persons employed directly is fifty-nine thousand five hundred and four, viz: Nine thousand two hundred and twenty-two in cotton manufactures, sixteen thousand eight hundred and fifty-seven in wool and worsted, twelve thousand four hundred and sixty-one in hosiery, ten thousand four hundred and eighty-two in carpets, five thousand nine hundred and fifteen in silk manufactures, two thousand four hundred and fifty in dye and print works, &c. It is safe to assume that sixty thousand persons receive remunerative wages in these remarkably developed industries within the limits of the city of Philadelphia, without including any adjunct industries, as the textile machinery manufacture, which is very large, and those producing dyes, chemicals, soaps, oils, sizing, and finishing materials, &c. These establishments represent about eight thousand persons employed, and the population directly represented by this great aggregate must be necessarily nearly what we assume it to be above, namely: The number of two hundred and fifty thousand, which leaves about one hundred thousand in those wards to be represented by other pursuits.

A similar preponderance of the textile industries is already established at Chester, Norristown, and Conshohocken, the mills at Chester and at Darby and other points in Delaware county being especially large and prosperous. A less decided tendency in this direction is apparent at Reading, Easton, Scranton, and Hawley where several fine silk-mills have recently been erected, generally as an outgrowth of the silk-mills at Paterson, New Jersey. It is indisputable that these industries give a wider range of employment than the iron manufacture does, and that females and young persons of both sexes find in them comparatively easy work and fairly remunerative wages when no other profitable employment would be open to them.

There certainly is none of the slavishness of mill work or factory labor, such as is known in England about them, and no degradation or poverty whatever, at least in Philadelphia and the adjacent towns. The social conditions are free from constraint on both sides, and there are almost none of those periodic contests over wages so common in the eastern cities and in England.

The first and greatest measure of credit due for this exceptional prosperity rightfully falls to the proprietors of the mills, almost all of whom have built up their several establishments from very small beginnings. It is simple justice to them to say that they are uniformly liberal and considerate, giving all of their employés a reasonable share in their prosperity in one way or another. Large numbers of the present proprietors have graduated after a thorough course of personal hard work as employés, and this is, at least, one of the reasons why the increase of the leading departments or divisions has been so rapid. The market for most of these products, say, particularly, for carpets, hosiery, worsted, and silk goods, has fortunately been large enough to take all that this increase in productive force could supply.

Almost the whole of this industrial growth has taken place within the last ten years. The carpet industry has had the most rapid development from very small beginnings to the point of almost completely supplying the enormous demand of the country for consumption, thus securing entire independence of foreign supplies. And during the last three years the finest products of Eastern design in rugs and Turkish carpets have been made by our own looms. There are now nearly one thousand looms on these Turkish and Smyrna goods, so-called, within this city alone, and it has become the great source of supply for the whole country. In the finer grades of carpets—Axminster, Wilton, and velvet, as well as Brussels—the production here is very large, and the growth within three years very rapid. Among the finest structures, architecturally, recently erected in this city, are several of the carpet-mills. The highest talent in designs is brought from England or the Continent, wherever found; it is not true, as is so often intimated, that our fabrics in any form, whether carpets, rugs, tapestries, or hangings, are deficient in taste or design; on the contrary more American designs are copied from us in England than are here taken from foreign patterns.

Another and analogous industry now in very rapid development is that of silk hangings, draperies, covers, &c., with all forms of upholstery covers. In these the smallest beginnings only existed a few years ago, and the entire body of the present establishments is less than five years old. There are thirty mills and over one thousand looms on this class of fabrics, one of them alone having consumed sixty-five thousand pounds of silk yarns within the last year. This form of silk manufacture is quite distinct from that at Paterson, New Jersey, and was originally French. Its sudden installation and growth to full proportions here is due to the enterprise of the venerable founder of the ingrain carpet industry, John Bromley, who honors an advanced age, by the establishment of both the Persian rug industry and that in silk hangings, both within the past three years. He also is now establishing a third in the series, the making of mohair plush, and the preparations of this remarkable firm are such that within a year it will take its place among the great industries established here beyond the possibility of failure.

The consumption of mohair plush has been very great for the past two years, and enormous prices have been paid for the finest fabrics. Three leading establishments recently entered upon the new and quite doubtful efforts necessary to establish the plush industry, and it can already be said that John and James Dobson have complete success in car-seating plushes, Folwell, Brother & Co. in carriage and cloaking plushes, and John Bromley & Sons in dress and cloaking plushes. A beginning in fine silk plushes has been made by M. W. Lipper & Co., the first results of which were shown at the late fair of the Women's Silk Culture Association. A significant incident in this connection is the announcement that a celebrated manufacturing house on the Dewsbury road, near Bradford, England, will remove its plant during the current year to a site already selected in the Kensington district of this city. The fact is at least certain that the distinguished proprietors visited this country a short time since and selected the site in question for some important purpose.

It should be added here that this new series of industries has a prominent representation in silk-faced upholstery coverings, the present favorite substitutes for the plainer reps and terries, which are made here now by about twenty mills. This city is in fact the chief locality of their manufacture in this country, and at least half the consumption of the country is now supplied by these mills. It already employs about six hundred looms and producing $2,500,000 in value of these fabrics yearly. Spun and reeled silks are both used for the ornamentation; one proprietor stating recently that his silk for the raised figures cost $17 a pound. They are made at all values up to $6 a yard, and may be placed beside the best imported without disparagement.

Embossed plushes for furniture coverings are successfully made by the Messrs. Dobson, and this, as the youngest of the new industries, promises as fairly as the others for the future.

One more class of rich fabrics belongs in this connection, which is the silk and embroidered covers for tables, mantels, and bed drapery, which are now much sought for. One manufacturer has attained high distinction in this line, Mr. J. O. Bentley, of Arch street, and several others have successfully begun in it. Embroidery by power machinery is in successful operation at two establishments, and it is extended to many articles of ornamental furnishing, to furniture and parlor draperies, curtains, &c.

The most interesting feature of this new series of industries, as they may be called, is the fact that they step forward at once to the most advanced position as works of taste and skill, and, indeed, of the highest artistic merit. This is much more than is generally supposed, and it quite disposes of the too common drift of suggestion that our textile fabrics are of too low a grade to supply all the wants of the country. This is not true in any leading class, and it is especially untrue as to the classes here above described, namely: carpets, rugs, upholstery, and furnishing fabrics, &c. These fabrics as now made in large quantities here in Philadelphia, and particularly developed and improved by the genius of our manufacturers within the last three years, are equal in taste and excellence to any in the world. The double-faced rugs now made of the size of whole carpets are quite beyond any competition from the other side in depth of pile, strength of fabric, and brilliancy of color.

The progress of these changes has, of course, brought here a large force of skilled workmen, French and English, to meet the wants of the employing establishments. Many French weavers have come to the upholstery work, and both French and English designers and superintendents have been brought out at liberal terms to direct the new carpet mills, the development being more rapid here than in England, the openings for capable and ambitious artists are better here, and they are freely employed.

The next in importance, if not itself greater than these classes altogether, is the industry in worsted goods, worsted fabrics, in clothing goods—as coating and dress goods—and worsted yarns, knit fancies, Shetland and zephyr articles, &c. The worsted spinning-mills now number twenty, most of them with a much larger plant of machinery and force employed than at any former time. They employ, as by the census just taken, two thousand eight hundred and seventy-five hands within the city, and there are other very large mills located at Darby, Conshohocken, and Bristol, beyond the city limits, yet owned and managed here. Their chief production is in yarns for worsted coatings, next for dress goods, braids and bindings, and next for soft-spun yarns used as Shetland, zephyr, and Germantown yarns. This last has become a very large business, and while a portion of the product is carded rather than combed, or prepared by the use of both, in a different manner from the ordinary worsted yarns, it is still properly to be classed as worsted.

The large preparation of worsted yarns spun for carpets is not included in the above account, since it is made of wholly different grades of wool, and is not interchangeable in use with dress goods or clothing worsteds. The production of the carpet-mills is very large, especially that of the Messrs. Dobson, John Bromley & Sons, McCallum, Crease & Sloan, and one or two others, but it is usually consumed by the houses producing it.

The most important new developments in the use of worsted, are in the increasing production of dress goods, and the introduction of fine worsted umbrella cloths, which are made by three or four mills. There is also the still more important class of silk-warp Henrietta cloths, which last are successfully made by three mills, one of them a branch of a very large

Bradford establishment. The margin of possible profit is as yet very small on these goods, and they can only be made by the employment of the highest degree of skill, such as secures perfect goods at all times, but the experiment is so far successful.

It is a notable fact that the worsted industry, which was one of the most recent to be established, now actually employs as many persons as the woolen, and not much less than the cotton separately. The numbers for 1882 being, as far as they could be clearly divided, nearly as follows:

| | | |
|---|---|---|
| In cotton manufactures, . . . . . . . . . . . | 9,222 | persons employed. |
| Woolen " . . . . . . . . . . . | 8,824 | " |
| Worsted " . . . . . . . . . . . | 8,833 | " |
| Carpet " . . . . . . . . . . . | 10,482 | " |
| Hosiery and knit goods, . . . . . . | 12,461 | " |

The worsted entering into the carpet manufacture is, of course, included in the carpet force, and that in fine knit goods, zephyrs, and Shetland fabrics also cannot be separated, except by estimate from the hosiery and knit goods return. But by a reasonable calculation, as taken from the carpet and hosiery items, these last would be reduced to ten thousand employés each, or less, and the classes of woolens and worsteds would be raised to ten thousand employés each.

It may be repeated that worsted spinning and its analogous process of preparing a soft wool thread with well drawn fibers, such as constitutes the Germantown and other knitting yarns, is a comparatively new industry. Still more recent is the soft twist cotton thread so much used in French cotton fabrics within the past three or four years. This class is beginning to be made, and fine, soft finished ginghams have been produced here equal to the European. But generally this class of fabrics, both in wool and cotton, need much cultivation and further development here. It is a significant fact that throughout the whole of the past year 1882, whatever the state of the market on other goods, the demand was good for worsted fabrics. The mills had all the orders they could fill, and every step in building larger and increasing the machinery, was fully justified by the succeeding demand. This was especially valuable to this large interest in Philadelphia and the adjoining towns, where the investment in worsted-mills and machinery now closely follows on the older establishments on cotton and ordinary woolens. The cotton goods market was much depressed, and many of the mills were stopped for a greater or less time, but there was not an hour of necessary stoppage in the worsted-mills, and some of them ran many hours overtime throughout the year.

On cotton goods of the staple classes, which were, until recently, the leading form of textile industry in Philadelphia and vicinity, the fortune of recent years is generally reported to have been severe. But the last two years were very favorable to the colored cottons most largely produced—ginghams, checks, shirtings, &c.—and all the mills on those goods were profitably employed. It was only during the last summer that the check in demand became serious, and in that case it was not properly an overproduction, but only the temporary check caused by a flood of European cottons prepared to take the fancy of the trade, and to sell at high prices for one or two seasons. These were the Alsace sateens, and soft thread cottons of the north of France, ingeniously designed for the invasion of our always greedy markets. The natural and necessary demand for domestic consumption is again setting all the machinery in motion, and as the peculiar product of cotton and mixed goods in and near Philadelphia, including jeans, cottonades, and all classes of cotton and mixed goods for standard wearing purposes among the western people, is likely to be as much wanted in the future as it has been heretofore, there is no probability that these mills will be compelled to change their business.

It would be very well if the finer Scotch ginghams and the skillfully designed French and Alsatian dress goods of cotton could be produced as freely here as the market might be disposed to take. A few mills have prepared their machinery for this purpose, but it is more in accordance with the disposition of our manufacturers to make the standard fabrics to which they have been accustomed, and to leave these fancy classes to the northern mills.

It is noticeable that the concessions in prices made so hastily at one time during the summer on standard cottons are being restored, and that the market is likely to be better while cotton is abundant and relatively cheap.

The hosiery industry is a large consumer of cotton in Philadelphia, although a large share of the cotton hosiery yarns are spun at the south. The mixed or merino yarns, so-called, are principally spun here, and the machinery so engaged occupies, perhaps, thirty spinning-mills, not of large size. It has long been the habit to spin carpet and mixed hosiery yarns in mills having from two to four sets of wool cards each, the material being mixed and prepared on woolen machinery altogether. Of the hosiery product, proper, about four fifths is cotton, but in the classification we have necessarily made, which includes all knit goods under this general name, about one third in quantity and one half in value is, in fact, of wool, or mixed materials. The value of fine knit woolens, Shetland zephyr goods, is large for the quantity by weight, and a great increase in the manufacture of those fine knit goods has recently taken place, some establishments employing three or four hundred persons each.

Useful knit articles of clothing, as the so-called Cardigan jackets, are also made in increasing quantities. New forms of knitting looms have been introduced, increasing the facility for producing knit underwear, shirts and drawers, although the greater part of these are made in the New York knit goods district, near Albany and Cohoes, or in New England mills. There are many mills here making Shetland shawls, scarfs, operas, and other fabrics knit on broad frames.

The carpet manufacture of Philadelphia is the largest in value, at present, of the textile divisions. It has increased more rapidly than any other, both in the number of establishments, persons employed, and in the machinery used, and also in the diversity of production, especially in the higher grades. The census just completed records the name and location of two hundred and thirty establishments, of three or more looms each, there being about sixty comparatively small ingrain carpet makers in this list, but all the others are establishments of a permanent character, and forty-eight of them produce over one hundred and fifty thousand yards each during the year. It is very remarkable that the production of ingrain carpets should be so well sustained, after the very great development of the tapestry and Brussels manufacture, and in this respect the experience of the past year fully confirms that of previous years. These ingrains were the original English types, and they hold their place with great tenacity in the favor of the body of American consumers. They are not made to any great extent elsewhere, and none are now imported. There are still about three thousand looms here employed on ingrain, damask, and Venetian carpets, each of which should, and usually does, weave a piece or roll of one hundred and thirty yards each week; fifty pieces yearly, or six thousand yards in a year. This estimated product of eighteen millions yards for the entire ingrain, damask, and Venetian carpet production of Philadelphia, would be fully sustained by a count in detail, if such were possible. The larger mills now run many power-looms on ingrains, with a large daily production, sufficient to compensate for the deficiencies of less regular employment of the hand-looms.

The carpet mills employ a less proportion of females or of persons less than adults, than in the hosiery industry, especially in the ingrain mills. In these, the proportion of men is four or five to one, of both females and youths, and the peculiar character of the work requiring an athletic weaver, the production is relatively larger than in other textile industries. In all the mills or establishments reported, and identified as in operation for the year 1882, two hundred and thirty in number, there were six thousand one hundred and forty-four men, three thousand two hundred and twelve women, and nine hundred and seventy-one youths employed, in all a total of ten thousand three hundred and twenty-eight persons. As the reported production in values varied from $1,800 to $3,000 for each person employed, the average of $2,000 is undoubtedly a low one, and the total value produced is in excess of $20,656,000.

In the hosiery and knit goods industry, there are altogether one hundred and sixty-two establishments, employing two thousand two hundred and thirty-one men, eight thousand two hundred and sixty-six females, and one thousand nine hundred and sixty-four youths, a total of twelve thousand four hundred and sixty-one persons.

In the preceding summaries for carpets, the Turkish or Smyrna rug production has been included, for the reason that all these are directly developed from the carpet establishments, and in most cases are still joint products. The machinery is necessarily more considerable in the rug manufacture, and the chenille cutter is indispensable, a web being woven, which is required to be cut into chenille threads which must be spooled and woven as filling for the finished fabrics. The process is nearly identical with the manufacture of the regular Axminster carpet, except that the chenille thread when cut is left as it is, and when woven forms a double face. These faces may, by making the threads heavy, and the pile deep, be made equal to the Axminster on each surface. The superior quality of these fabrics has greatly extended their use.

The chenille cutter in use for these rug threads, is also employed very largely in the silk chenille and dress trimmings industry in Philadelphia. The Philadelphia machine for cutting chenille is quite superior to the European machines of the same class; and is a striking instance of the superior adaptations brought into use in the rapid progress the textile industries have recently made.

The silk industries of Philadelphia are also among the prosperous departments; they have increased rapidly in the last decade, and are more than three times greater than in 1870. They employ nearly six thousand persons, at wages in the most cases fair, and even liberal, and the employment is light, and altogether free from unpleasant associations. The products differ from those at Paterson, and are largely made up of dress and upholstery trimmings, furniture coverings, tapestries, and hangings. There is one large mill on ribbons, and one on silk dress-goods, with two or three large makers of silk thread, tram, and organzine. A large mill recently established for spun silk, with two or three on silk yarns for tapestries. There are also several silk dyers and printers, doing a large business for the Paterson weavers and for the Eastern States. There is no lack of skill in the most difficult departments of silk manufacture, and the best of trained silk weavers from France have been brought into the mills at intervals during the past few years. About one hundred thousand pounds of raw silk are required for the supply of the mills here, not more than in previous years, in consequence of the less proportion of spinning done, since the removal of spinning machinery to a large mill at Scranton. The use of noils has greatly increased, however, and at least one hundred thousand pounds of silk noils yarn are now consumed in the new industries of hangings and upholstery goods.

The productive force or capacity of persons employed in the silk industry, is not so great *per capita* as in wool or worsted As reported in the census for 1880, at New York it does not exceed $1,100 for each person, and for other cities it is nearly the same, although no report is yet made for Paterson, New Jersey. As the proportion of females and minors is large, and the quantities handled are small relatively to the amount of labor applied, it is probable that $1,200 would be nearly correct as to value to be assumed for the production of the average persons so employed. The number of employés now returned as having employment in seventy-three establishments in Philadelphia, is one thousand nine hundred and six men, three thousand four hundred and seventeen females, and five hundred and ninety-two youths—together five thousand nine hundred and fifteen persons. This force, at $1,200 each, would represent a value of silk products for the year $7,098,000, which is undoubtedly near the truth. A careful estimate gives about one third of this value to dress and upholstery trimmings, one third to broad furniture coverings, including hangings, and the remainder to dress goods, ribbons, silk yarns, and many smaller classes.

Establishments in the silk industry are, as has been said, much sought for now in the northern towns and cities—Easton, Reading, Scranton, and other places. At Hawley a fine mill has been established, substantially for the uses of a Paterson firm, who occupy it with a large force. There is no doubt that a considerable extension of this class of industries will soon take place, carrying some departments of it into other towns, and giving a high place to the industry, as a whole, among the resources of the people.

There has yet been no proper effort to introduce the use of silk grown in the United States on the part of manufacturers, chiefly because of the cheapness of Japanese and Chinese raw silk, and the great quantity of silk noils and silk waste coming in free of duty. The decline of consumption in Europe throws great quantities of cheap silk stock on the market, which is inferior in quality, but tempting to the use of proprietors where the market makes so little distinction as to the finished goods. American grown silk is superior to the average of the raw silk imported, and it must soon come into more general demand.

SUMMARY *of the textile industries of Philadelphia, showing the number of establishments and number of persons employed:*

| INDUSTRIES. | No. of establishments. | NUMBER OF PERSONS EMPLOYED. | | | |
|---|---|---|---|---|---|
| | | Men. | Women. | Youths. | Total. |
| Carpets, | 230 | 6,130 | 3,338 | 961 | 10,429 |
| Hosiery and knit goods, | 162 | 2,231 | 8,266 | 1,964 | 12,461 |
| Silk and silk mixed goods, | 73 | 1,906 | 3,417 | 592 | 5,915 |
| Cotton goods, | 119 | 3,670 | 5,210 | 1,461 | 10,341 |
| Woolen goods, | 36 | 2,570 | 2,804 | 994 | 6,368 |
| Yarns, | 75 | 877 | 522 | 706 | 2,105 |
| Dye and print works, | 85 | 1,940 | 121 | 193 | 2,254 |
| Total, | 780 | 19,324 | 23,678 | 6,871 | 49,873 |

The following is Mr. Blodget's census of manufactures, with a summary of the number of establishments and persons employed, for the year 1882, in the city of Philadelphia:

| WARDS. | No. of establishments. | PERSONS OF EACH CLASS EMPLOYED. | | | |
|---|---|---|---|---|---|
| | | Men. | Women. | Youths. | Total. |
| First, | 271 | 3,618 | 680 | 538 | 4,836 |
| Second, | 243 | 1,724 | 683 | 301 | 2,708 |
| Third, | 143 | 735 | 162 | 97 | 994 |
| Fourth, | 183 | 2,024 | 186 | 97 | 2,307 |
| Fifth, | 451 | 6,236 | 1,637 | 1,156 | 9,029 |
| Sixth, | 1,603 | 22,830 | 22,453 | 4,376 | 49,659 |
| Seventh, | 332 | 1,594 | 1,228 | 531 | 3,354 |
| Eighth, | 423 | 4,845 | 2,303 | 728 | 7,876 |
| Ninth, | 756 | 10,132 | 5,222 | 1,456 | 16,810 |
| Tenth, | 473 | 4,632 | 1,809 | 911 | 7,352 |
| Eleventh, | 399 | 2,868 | 779 | 475 | 4,122 |
| Twelfth, | 341 | 2,204 | 291 | 364 | 2,859 |
| Thirteenth, | 257 | 1,607 | 340 | 212 | 2,159 |
| Fourteenth, | 439 | 4,151 | 924 | 580 | 5,655 |
| Fifteenth, | 544 | 9,756 | 3,232 | 1,682 | 14,670 |
| Sixteenth, | 405 | 4,292 | 741 | 1,119 | 6,152 |
| Seventeenth, | 340 | 2,346 | 1,488 | 401 | 4,235 |
| Eighteenth, | 276 | 6,428 | 1,256 | 807 | 8,491 |
| Nineteenth, | 668 | 9,549 | 6,006 | 2,448 | 18,003 |
| Twentieth, | 543 | 3,212 | 929 | 555 | 4,696 |
| Twenty-first, | 176 | 2,978 | 1,866 | 1,104 | 5,948 |
| Twenty-second, | 318 | 2,646 | 2,153 | 1,111 | 5,910 |
| Twenty-third, | 267 | 3,813 | 1,625 | 1,075 | 6,513 |
| Twenty-fourth, | 192 | 3,303 | 468 | 326 | 4,097 |
| Twenty-fifth, | 163 | 4,130 | 890 | 988 | 6,008 |
| Twenty-sixth, | 191 | 6,212 | 817 | 1,360 | 8,389 |
| Twenty-seventh, | 176 | 3,264 | 520 | 698 | 4,482 |
| Twenty-eighth, | 144 | 3,441 | 1,288 | 636 | 5,365 |
| Twenty-ninth, | 167 | 1,528 | 115 | 170 | 1,813 |
| Thirtieth, | 148 | 1,434 | 155 | 331 | 1,920 |
| Thirty-first, | 450 | 5,506 | 3,926 | 1,682 | 11,114 |
| Total, | 11,482 | 143,039 | 66,172 | 28,355 | 237,566 |
| Census of 1880, | 8,377 | 107,894 | 51,618 | 14,350 | 173,862 |
| Difference, | 3,105 | 35,145 | 14,554 | 14,005 | 63,704 |

# MISCELLANEOUS INDUSTRIES.

**A STATEMENT** *of Miscellaneous Industries, showing the number of persons employed, value of production, etc., compiled from returns made to this office, etc., for the year ended December 31, 1882.*

| INDUSTRIES. | Number of establishments. | Average number of days in operation | Number of persons employed. | Total amount paid in wages during the year. | Value of annual product. |
|---|---|---|---|---|---|
| Agricultural implements, | 19 | 283 | 1,345 | $455,818 68 | $1,829,241 77 |
| Air-brakes, | 1 | 303 | 303 | 106,429 78 | 1,213,852 37 |
| Axes, | 4 | 269 | 240 | 109 807 80 | 210,181 40 |
| Axles, | 6 | 219 | 326 | 144,471 59 | 1,374,570 00 |
| Barrels and kegs, | 6 | 281 | 294 | 69,500 00 | 477,500 00 |
| Boiler-works, | 10 | 300 | 480 | 206,818 78 | 638,400 00 |
| Bolts and nuts, | 4 | 301 | 362 | 108,724 28 | 623,812 07 |
| Boots and shoes, | 60 | 259 | 3,421 | 1,354,040 44 | 5,010,400 00 |
| Brass, bronze, etc , | 10 | 299 | 245 | 149,613 00 | 1,477,250 00 |
| Bridges, (iron,) | 6 | 291 | 1,457 | 769,082 72 | 4,049 087 05 |
| Britannia-ware, | 1 | 300 | 18 | 19,000 00 | |
| Cars, | 14 | 296 | 5,204 | 2,359 520 00 | 15 597,884 68 |
| Carriages, | 16 | 305 | 340 | 185,276 64 | 460,696 02 |
| Chains, | 3 | 273 | 132 | 110,000 00 | 1,168,571 32 |
| Copper, | 2 | 290 | 53 | 22,194 55 | 256,069 10 |
| Files, | 2 | 281 | 233 | 107,000 00 | 258,432 00 |
| Flexible shafts, | 1 | 307 | 49 | 5,884 41 | 35,000 00 |
| Furniture, | 20 | 295 | 960 | 425 182 43 | 1,267,011 08 |
| Galvanic works, | 2 | 290 | 65 | 25,000 00 | 52,000 00 |
| Hinges, | 1 | 300 | 90 | 23 000 00 | 100,000 00 |
| Iron pipes, | 6 | 260 | 2,402 | 935,985 53 | 8,798 602 13 |
| Iron works, | 3 | 304 | 113 | 59,650 82 | 180,376 13 |
| Lightning-rods, | 1 | 260 | 76 | 23,000 00 | 340,000 00 |
| Locks, | 2 | 296 | 127 | 46,500 00 | 137,800 00 |
| Locomotives, | 4 | 306 | 4,418 | 2,585,907 75 | |
| Paper, | 16 | 301 | 955 | 339,114 93 | 2,219,273 30 |
| Planing-mills, | 32 | 281 | 572 | 251,270 28 | 976,880 54 |
| Pumps, | 2 | 305 | 75 | 63 000 00 | |
| Repairs, (car shops,) | 3 | 310 | 530 | 223,957 67 | |
| Sash and doors, | 18 | 276 | 420 | 218,868 48 | 707,153 39 |
| Saws, | 1 | 308 | 80 | 47,500 00 | 187,500 00 |
| Ship-building, | 1 | 308 | 1,328 | 697,649 78 | |
| Shovels, | 6 | 297 | 304 | 130 429 53 | 480,420 50 |
| Slate, | 6 | 256 | 216 | 60,456 00 | 81,000 00 |
| Springs, | 6 | 293 | 299 | 218,883 51 | 1,690,785 43 |
| Switches, | 1 | 305 | 276 | 100,000 00 | 400,000 00 |
| Tools, | 2 | 301 | 70 | 60,000 00 | 296,459 00 |
| Tube-cleaners, | 1 | 313 | 1 | 520 00 | 2,397 00 |
| Wagons, | 7 | 300 | 373 | 196,252 00 | 493 960 00 |
| Wheelbarrows, (steel,) | 1 | 296 | 22 | 7,315 43 | 48,000 00 |
| Wire-works, | 4 | 297 | 231 | 113,902 00 | 561,000 00 |
| Total, | 311 | 288 | 28,505 | $13,166,541 81 | $53,711,556 28 |

# PENNSYLVANIA AND NEW YORK OIL FIELDS.

**REPORT** *of the Pennsylvania and New York Oil Fields, by district, for the year ended December 31, 1882, compiled from "Stowell's Petroleum Reporter."*

(A barrel of oil is uniformly forty-two gallons in the following compilation.)

| NAME OF DISTRICT. | PRODUCT FOR THE YEAR. | | WELL ACCOUNT. | | | | |
|---|---|---|---|---|---|---|---|
| | Total barrels. | Daily average—barrels. | Number producing December 31, 1882. | Number drilling December 31, 1882. | Number completed during December, 1882. | Number of dry holes during December, 1882. | Number of new rigs building December, 1882. |
| Northern Pennsylvania—Bradford, | 16,792 190 | 46,006 | 9,500 | 40 | 35 | . . . . . . | 39 |
| Middle—Warren and Forest counties, | 3,859 510 | 10,574 | 1 200 | 26 | 12 | 3 | 12 |
| Southern—Oil Creek and Allegheny River, | 3 204 335 | 8 779 | 6 000 | 18 | 10 | 6 | 8 |
| Allegany, New York, | 6,685,705 | 18 317 | 1,300 | 54 | 65 | 3 | 66 |
| | 30,541,740 | 83,676 | 18,000 | 138 | 122 | 12 | 125 |

## PRODUCTION.

*Average Daily Production each month in the following years:*

| A. D. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Averages. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1871, | 11,287 | 13,306 | 12.914 | 12,866 | 13,187 | 13,678 | 14,725 | 15,922 | 15.398 | 15.653 | 15.487 | 15 418 | 14.254 |
| 1872, | 13,497 | 15,965 | 14,890 | 15,403 | 17,326 | 16.871 | 16,702 | 17 739 | 16,681 | 4,272 | 21,287 | 20,825 | 16,399 |
| 1873, | 18.825 | 21,725 | 21.461 | 21.384 | 25 044 | 26,449 | 27,983 | 30,198 | 31.809 | 30,403 | 33,049 | 34,980 | 27.074 |
| 1874, | 20.407 | 29,839 | 28,498 | 25,958 | 28,895 | 30,725 | 33.337 | 30,049 | 28 021 | 29,669 | 28,702 | 27,682 | 29,919 |
| 1875, | 37,653 | 25,708 | 25,469 | 22,502 | 22,468 | 23 207 | 25,431 | 23,186 | 23,298 | 23 583 | 23.340 | 23,254 | 24,078 |
| 1876, . | 27,489 | 23.065 | 23,167 | 23,383 | 23 721 | 24.120 | 24,633 | 25,533 | 26,020 | 26 102 | 26.216 | 25 390 | 24.527 |
| 1877, | 22.975 | 27,979 | 29,087 | 32,427 | 36,374 | 37,693 | 38,355 | 41,089 | 40.897 | 40,946 | 39.114 | 40,518 | 35,972 |
| 1878, | 27.190 | 39,102 | 38,980 | 39.863 | 40.802 | 40 575 | 41,415 | 43.288 | 43.857 | 44.187 | 44 965 | 42.538 | 41 532 |
| 1879, | 38,816 | 43.515 | 48.365 | 51,015 | 53,062 | 55,855 | 56 057 | 61,042 | 61.890 | 59.238 | 57.046 | 57,076 | 54,087 |
| 1880, | 44,191 | 64,552 | 65.032 | 67,190 | 71,901 | 71,948 | 72,530 | 75,517 | 78,210 | 76 956 | 75,814 | 72,214 | 71,124 |
| 1881, . . | 61,423 | 68,326 | 73,369 | 73,526 | 77.203 | 79,262 | 76,538 | 75,217 | 73,114 | 74,941 | 75,561 | 80,000 | 74,954 |
| 1882, . . | 75,921 | 76,119 | 80,070 | 80,093 | 80,212 | 94,198 | 105,102 | 100,145 | 87,346 | 74,118 | 73,098 | 61,210 | 82,303 |

## SHIPMENTS.

*Shipment of Crude, and Refined reduced to Crude equivalent, out of the producing region in the following years:*

| A. D. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Totals. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1871, . . | 437,691 | 347,718 | 383,890 | 389,147 | 587,375 | 501,754 | 541.137 | 528.134 | 551.075 | 505,071 | 480 977 | 410,822 | 5.664,791 |
| 1872, . . | 476,966 | 407,606 | 276,220 | 428,512 | 510,417 | 529,228 | 591.238 | 621,954 | 541,607 | 607.468 | 477 945 | 430 786 | 5,899.947 |
| 1873, . | 573,124 | 527.440 | 668.374 | 708,191 | 768,176 | 696,414 | 814 449 | 864,768 | 952,955 | 1,010,852 | 959.589 | 955.443 | 9,499,775 |
| 1874, . | 843,663 | 501,220 | 518,246 | 803.409 | 899,027 | 815.413 | 940,281 | 793.865 | 1,014 570 | 543,341 | 546.117 | 602,348 | 8,821.500 |
| 1875, . . | 435,095 | 327,776 | 693 918 | 729,581 | 681 679 | 745 986 | 904.537 | 882,089 | 1,109 392 | 871,917 | 671,066 | 871 902 | 8,942 938 |
| 1876, . | 677.289 | 519,193 | 623 762 | 603,037 | 646.150 | 921,862 | 1,228,539 | 1,203,402 | 1,154,549 | 524.190 | 871 496 | 1,190,983 | 10,191,452 |
| 1877, . . | 743.461 | 484 904 | 913,919 | 903,526 | 1,234.324 | 1,391,124 | 1,096,951 | 1,425,943 | 1,563.797 | 1,268.971 | 1.205,634 | 600,019 | 12.832 573 |
| 1878, . . | 775 791 | 774.234 | 741,512 | 846 636 | 960.894 | 1,135,119 | 1,330,454 | 1,655,651 | 1.434.225 | 1,747.390 | 1,281.410 | 992.688 | 13,676,000 |
| 1879, . . | 663.998 | 702.729 | 973.879 | 136,188 | 1,331,469 | 1,369.314 | 1,625.035 | 1.808 239 | 1,627,120 | 1,662,269 | 1,453.645 | 1,532 585 | 15.886,470 |
| 1880, . . | 1,650,409 | 1,395,151 | 1,613,371 | 1,842.268 | 1 095.259 | 975.083 | 1,231,611 | 1.394,129 | 1,252 635 | 1,665,933 | 1,226,030 | 1,335 613 | 15,674 492 |
| 1881, . . | 1,061.617 | 915 028 | 1,276 746 | 1,348,398 | 1,563,436 | 1 729,697 | 1 925 532 | 2,214,877 | 2,131,950 | 2,080,467 | 2,066,906 | 1,969,581 | 20 284.235 |
| 1882, . . | 1,657,067 | 1,787,909 | 1,718,956 | 1,678,134 | 1,827,356 | 2,172,685 | 2,402,970 | 2,047,545 | 1,992,171 | 2,089,428 | 1,404,640 | 1,121,453 | 21,878,314 |

## STOCK.

*Total stock of Crude in the Oil Producing Fields at the close of each month in the following years:*

| A. D. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Averages. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1871, . . | 537 751 | 587, 021 | 642, 000 | 771, 000 | 605 000 | 554. 000 | 511, 220 | 530. 146 | 541. 300 | 495, 102 | 502 960 | 532 000 | 575. 550 |
| 1872, . . | 532, 971 | 579. 793 | 662. 497 | 877, 832 | 950. 803 | 1. 010, 302 | 990. 229 | 997. 166 | 951 410 | 914 423 | 886 909 | 1. 084. 423 | 869. 896 |
| 1873, . | 1. 183. 728 | 1. 265. 373 | 1, 244, 657 | 1. 178. 643 | 1. 192. 541 | 1, 324. 493 | 1, 433, 620 | 1. 513 890 | 1. 521, 185 | 1, 452. 777 | 1. 493. 875 | 1. 625, 157 | 1, 369. 161 |
| 1874, . . | 1. 948. 919 | 2. 283 032 | 2 648. 210 | 2. 623 534 | 2. 594. 286 | 2, 701 625 | 2 279. 479 | 2. 932. 444 | 2 758 504 | 3, 134. 902 | 3 449 845 | 3. 705. 639 | 2. 755 035 |
| 1875, . | 4. 104. 703 | 4. 496 751 | 4, 592. 364 | 4. 537. 843 | 4 552 672 | 4. 502. 896 | 4 386. 720 | 4. 223 397 | 3, 812 945 | 3. 672, 101 | 3, 701 235 | 3 550 200 | 4 177 819 |
| 1876, . | 3. 585. 143 | 3 734. 835 | 3. 829. 250 | 3 900 703 | 3. 989. 904 | 3. 791. 642 | 3 326. 726 | 3 304 405 | 2 930 456 | 3 040 108 | 2. 955, 092 | 2. 824. 739 | 3 434. 417 |
| 1877, . . | 2. 604. 128 | 2 860. 636 | 3. 210. 454 | 3 279 731 | 3. 173 008 | 2. 912. 674 | 3 004. 728 | 2. 852, 544 | 2 503 657 | 2 504 012 | 2. 471. 798 | 3. 127 837 | 2 875. 434 |
| 1878. | 3. 555. 342 | 3. 875. 964 | 4. 342, 832 | 4 692 090 | 4. 996 058 | 5. 078. 189 | 5. 031. 600 | 4 717 877 | 4 599 362 | 4. 221. 769 | 4 209, 300 | 4. 615. 299 | 4. 501. 308 |
| 1879, | 5. 321, 222 | 5 813 663 | 6. 318 099 | 6. 689, 111 | 6 980. 064 | 7. 263. 150 | 7. 353 382 | 7, 414 195 | 7. 620 525 | 7. 794 634 | 8, 051. 469 | 8, 470. 490 | 7. 090. 834 |
| 1880. | 8 724. 194 | 9 204 062 | 9. 606. 683 | 10, 780. 153 | 11 916. 577 | 13. 099 934 | 14. 116. 753 | 15, 063 651 | 16. 157. 316 | 16 877 019 | 18 025 409 | 18 923 430 | 13 541 678 |
| 1881, . . | 20, 110 903 | 21 108 003 | 22. 105, 789 | 22 963 171 | 23. 793 028 | 24. 441. 191 | 24. 888. 337 | 25. 005. 187 | 25. 066 657 | 25 309. 361 | 25, 509. 285 | 26. 019 704 | 23 860. 051 |
| 1882, . | 26, 716, 188 | 27 059. 611 | 27. 822, 825 | 28, 547, 481 | 29, 206, 697 | 29. 859. 952 | 30 715, 144 | 31, 772, 094 | 32, 400. 303 | 32 608, 533 | 33. 728, 555 | 34, 596. 612 | 30, 411, 165 |

## DRILLING WELLS.

*Number of Drilling Wells at the close of each month in the following years:*

| A. D. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Averages. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1871, . | 140 | 173 | 240 | 279 | 356 | 303 | 329 | 330 | 439 | 486 | 477 | 394 | 329 |
| 1872, | 363 | 369 | 313 | 302 | 386 | 391 | 359 | 392 | 301 | 311 | 354 | 318 | 342 |
| 1873, . . | 361 | 349 | 227 | 177 | 228 | 395 | 340 | 267 | 197 | 163 | 137 | 60 | 233 |
| 1874, . . | 37 | 55 | 99 | 213 | 225 | 210 | 180 | 128 | 107 | 82 | 57 | 54 | 121 |
| 1875, . . | 40 | 40 | 45 | 64 | 127 | 162 | 118 | 96 | 132 | 170 | 179 | 168 | 112 |
| 1876, . . | 142 | 151 | 230 | 267 | 307 | 340 | 353 | 374 | 511 | 565 | 618 | 493 | 362 |
| 1877, . . | 457 | 463 | 395 | 448 | 512 | 395 | 365 | 417 | 535 | 573 | 565 | 426 | 463 |
| 1878, . . | 334 | 326 | 379 | 409 | 376 | 266 | 188 | 185 | 240 | 282 | 297 | 218 | 292 |
| 1879, . . | 265 | 323 | 406 | 468 | 460 | 384 | 329 | 258 | 270 | 313 | 372 | 440 | 357 |
| 1880, | 540 | 535 | 577 | 580 | 460 | 440 | 452 | 515 | 491 | 469 | 475 | 408 | 495 |
| 1881, . . | 383 | 420 | 437 | 446 | 470 | 408 | 379 | 352 | 388 | 445 | 475 | 468 | 423 |
| 1882, . . | 422 | 438 | 408 | 405 | 381 | 226 | 240 | 194 | 117 | 184 | 154 | 138 | 273 |

## PRODUCING WELLS.

*Number of Producing Wells at the close of each month in the following years:*

| A. D. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Averages. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1871, . | 2,897 | 3,036 | 2,921 | 2,994 | 3,087 | 3,177 | 3,288 | 3,369 | 3,466 | 3,606 | 3,692 | 3,775 | 3,292 |
| 1872, . . | 3,892 | 3,936 | 3,943 | 3,967 | 4,085 | 4,144 | 4,245 | 4,423 | 4.475 | 4,475 | 4,529 | 4,553 | 4,250 |
| 1873, . . | 4,485 | 4,490 | 4.411 | 4,265 | 4,317 | 4,400 | 4,420 | 4,163 | 3,940 | 3.654 | 3,413 | 3,358 | 4,193 |
| 1874, . | 3,311 | 3.235 | 3,308 | 3,301 | 3.266 | 3,298 | 3,293 | 3,287 | 3,254 | 3,270 | 3,220 | 3,270 | 3,293 |
| 1875, . | 3,132 | 3,112 | 3.060 | 3.052 | 3,080 | 3,084 | 3,067 | 3,088 | 3,112 | 3,125 | 3,174 | 3,088 | 3,098 |
| 1876, | 3,314 | 3,638 | 3.670 | 3,772 | 3,930 | 4,527 | 4,774 | 6,047 | 5,285 | 5,552 | 5,809 | 6,000 | 4,685 |
| 1877, . | 6.283 | 6,441 | 6,666 | 6,846 | 7,037 | 7.352 | 7,567 | 7,684 | 7,872 | 8,061 | 8,323 | 8.458 | 7.383 |
| 1878, . | 8,616 | 8,725 | 8,848 | 9,071 | 9,400 | 9,605 | 9,776 | 9,884 | 10,012 | 10,188 | 10.276 | 10,337 | 9,561 |
| 1879, . . | 10,482 | 10,582 | 10,692 | 10,782 | 11,045 | 11,223 | 11.461 | 11,585 | 11,760 | 11,860 | 11,960 | 11,950 | 11,283 |
| 1880, . | 12.000 | 12,072 | 12,222 | 12,572 | 12,972 | 13,172 | 13,275 | 13,500 | 13,825 | 14,100 | 14,400 | 14.700 | 13.234 |
| 1881, . . | 14,900 | 15,050 | 15,500 | 15,769 | 16,150 | 16,700 | 17.000 | 17,250 | 17.562 | 17.799 | 18,040 | 18,300 | 16,668 |
| 1882, . . | 18,400 | 18,600 | 18,850 | 19,150 | 19,350 | 19,500 | 19,570 | 19,600 | 19,600 | 19,000 | 18,700 | 18,000 | 19,027 |

## NEW WELLS COMPLETED.

*Number of Drilling Wells completed in the following years:*

| A. D. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1871, | 86 | 57 | 64 | 87 | 99 | 154 | 147 | 112 | 128 | 182 | 154 | 191 | 1,461 |
| 1872, . | 37 | 120 | 89 | 121 | 135 | 84 | 128 | 118 | 82 | | 64 | 105 | 1.183 |
| 1873, . | 93 | 94 | 100 | 105 | 102 | 130 | 114 | 120 | 106 | 101 | 100 | 98 | 1,263 |
| 1874, | 102 | 104 | 110 | 113 | 109 | 101 | 121 | 107 | 104 | 120 | 106 | 120 | 1,317 |
| 1875, . | 190 | 187 | 195 | 186 | 172 | 190 | 200 | 210 | 201 | 220 | 217 | 230 | 2,398 |
| 1876, . | 240 | 231 | 242 | 200 | 202 | 261 | 248 | 270 | 209 | 273 | 272 | 272 | 2,920 |
| 1877, . | 281 | 241 | 291 | 269 | 320 | 403 | 317 | 255 | 322 | 467 | 391 | 382 | 3,939 |
| 1878, | 274 | 226 | 211 | 409 | 470 | 269 | 203 | 186 | 174 | 229 | 248 | 165 | 3,064 |
| 1879, . . | 136 | 132 | 238 | 270 | 402 | 330 | 327 | 283 | 210 | 232 | 227 | 261 | 3.038 |
| 1880, . | 320 | 230 | 367 | 500 | 426 | 310 | 338 | 368 | 356 | 364 | 336 | 302 | 4.217 |
| 1881, . | 222 | 220 | 271 | 316 | 406 | 374 | 336 | 332 | 312 | 322 | 363 | 406 | 3,380 |
| 1882, . . | 347 | 340 | 385 | 432 | 469 | 340 | 185 | 253 | 164 | 117 | 150 | 122 | 3,307 |

# EXPORTS OF PETROLEUM, DECEMBER, 1882.

**STATEMENT** *showing the exports of Petroleum and Petroleum Products from the principal and all other customs districts of the United States during the month of December, 1882, and during the twelve (12) months ended the same, as compared with similar exports during the corresponding periods of the preceding year, by Joseph Nimmo, junior.*

| CUSTOMS DISTRICTS. | CRUDE. | | NAPTHAS. | | ILLUMINATING. | | LUBRICATING. | | RESIDUUM. | | TOTAL. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Gallons. | Dollars. | Gallons. | Dollars. | Gallons. | Dollars. | Gallons. | Dollars. | Gallons. | Dollars. | Gallons. | Dollars. |
| Boston, | . . . . . . | . | | . . | 426 459 | 49, 427 | 12 307 | 2,802 | . | . . | 438 766 | 52.229 |
| New York, | 3,270,427 | 266 371 | 1,061 762 | 79,236 | 19,540.676 | 1 796 949 | 881,319 | 267,529 | 197,862 | 14,330 | 24,952.046 | 2,424,415 |
| Philadelphia, | 144,949 | 10,871 | 141,338 | 8,480 | 3 874,280 | 375,384 | 55,436 | 8,510 | 2,100 | 146 | 4,218 103 | 403,391 |
| Baltimore, | . . . | . . . | . . . | . . . | 342,140 | 28 709 | . . . . . | . . | . . | . . | 342,140 | 28,709 |
| San Francisco, | . . . | . . . . | 3,400 | 1,929 | 35 480 | 6,827 | 131 | 147 | . . . | . . | 39,011 | 8,903 |
| All other districts, | . . | . . . | 19,590 | 3 778 | 185,444 | 28 755 | 6,539 | 2,734 | . | . . | 211.573 | 35 267 |
| Total for December, 1882, | 3,415 376 | 277,242 | 1,226 090 | 93,423 | 24,404,479 | 2 286,051 | 955,732 | 281,722 | 199,962 | 14,476 | 30,201,639 | 2 952 914 |
| Total for December, 1881, | 2.463,047 | 180,783 | 975,404 | 93,052 | 40,748,846 | 3,732,388 | 416,397 | 102,622 | 647,178 | 31,585 | 45,250.872 | 4 140,430 |
| Total for 12 months ended Dec. 31, 1882, | 45,011,154 | 3,373 302 | 16,969,839 | 1,304,041 | 428,424,581 | 37.635,981 | 8,821,536 | 2,034 487 | 4,265 352 | 275 263 | 503 492,462 | 44,623,074 |
| Total for 12 months ended Dec. 31, 1881, | 40,430,108 | 3,089,297 | 20 655.116 | 1,981,197 | 444,666 615 | 42,122,683 | 5,053 862 | 1,165,605 | 3,756,018 | 197,321 | 514,561,719 | 48 556 103 |

# EMPLOYÉS.

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**AN EXHIBIT** *of the number of Employés engaged in the various industries in the State, compiled from returns made to the Bureau for the year ended December 31, 1882.*

### Coal—Anthracite.

| | | |
|---|---|---|
| Miners, | Inside employees. | 20,345 |
| Miners' laborers, | | 11,095 |
| Company men, | | 6.453 |
| Drivers and runners, | | 5,696 |
| Door-boys, | | 2,165 |
| All others, | | 3 426 |
| Engineers, | Outside employees. | 1,428 |
| Firemen, | | 1,023 |
| All other mechanics, | | 1.709 |
| Company laborers, | | 8,724 |
| Slate-pickers, | | 14,269 |
| All others, | | 4,187 |
| Total, | | 80,520 |

### Coal—Bituminous.

| | |
|---|---|
| Miners, | 28,372 |
| Inside laborers, | 1,281 |
| Outside laborers, | 2,863 |
| Mule-drivers, | 2,412 |
| Blacksmiths and carpenters, | 616 |
| Overseers and clerks, | 681 |
| Boys, | 1,343 |
| Coke-oven employees, | 2,080 |
| All others, | 385 |
| Total, | 40,033 |

### Blast-Furnaces.

| | |
|---|---|
| Foundrymen, | 149 |
| Keepers and helpers, | 1,193 |
| Fillers, | 2,085 |
| Cindermen, barrowmen, and hot-blast men, | 1,543 |
| Metal-carriers and laborers, | 4,327 |
| Engineers and firemen, | 661 |
| Other mechanics, | 755 |
| All others, | 2,796 |
| Total, | 13,509 |

### Bloomaries.

| | |
|---|---|
| Run-out men and helpers, | 52 |
| Forgemen and helpers, | 269 |
| Hammermen and helpers, | 45 |
| Engineers, blacksmiths, and carpenters, | 33 |
| Laborers, | 114 |
| Boys, | 7 |
| All others, | 30 |
| Total, | 550 |

### Bessemer Steel.

| | |
|---|---|
| Converting department, | 1,253 |
| Blooming department, | 431 |
| Rail department, | 1,630 |
| Gas-producing department, | 59 |
| Steam-producing department, | 232 |
| Forge department, | 91 |
| Locomotive department, | 2 093 |
| Miscellaneous department, | 392 |
| Not classified, | 319 |
| Total, | 6,500 |

### Crucible Steel.

| | |
|---|---|
| Heaters, | 79 |
| Rollers and helpers, | 111 |
| Steel-melters and helpers, | 47 |
| Hammermen and helpers, | 50 |
| Engineers, blacksmiths, carpenters, millwrights, and mechanics, | 200 |
| Straighteners, shearmen, helpers, firemen, etc., | 705 |
| Laborers, | 512 |
| Boys, | 151 |
| Not classified, | 1,379 |
| Total, | 3 234 |

### Rolling-Mills.

| | |
|---|---|
| Puddlers and helpers, | 8,964 |
| Heaters, | 1.230 |
| Rollers, | 951 |
| Roll-hands, | 1,915 |
| Nailers and feeders, | 1,309 |
| Engineers, millwrights, carpenters, and blacksmiths, | 1,541 |
| Laborers, | 15,546 |
| Boys, | 2,039 |
| All others, | 7,551 |
| Total, | 41,046 |

### Glass—Window.

| | |
|---|---|
| Blowers, | 172 |
| Gatherers, | 172 |
| Flatteners, cutters, and assorters, | 120 |
| Employees in flattening department, | 84 |
| Batch-mixers, | 18 |
| Teazers and helpers, | 90 |
| Potmakers and assistants, | 39 |
| Laborers, | 103 |
| Not classified, | 795 |
| Total, | 1,593 |

### Glass–Flint and Green.

| | |
|---|---|
| Pressers, | 235 |
| Handlers, finishers, and foot-finishers, | 299 |
| Blowers—mold, chimney, and other, | 468 |
| Gatherers, | 430 |
| Mixers, | 27 |
| Teazers, | 40 |
| Cutters, grinders, and stopper-makers, | 139 |
| Laborers, | 311 |
| Boys—snapping, carrying, and other, | 1.815 |
| Not classified, | 2,313 |
| Total, | 6,077 |

### Lumber.

| | |
|---|---|
| Sawyers, | 224 |
| Setters, edgers, and filers, | 224 |
| Lath-sawyers and bundlers, | 187 |
| Laborers, | 1,883 |
| Boys, | 190 |
| Not classified, | 892 |
| Total, | 3,600 |

### Iron-Foundries and Machine-Shops.

| | |
|---|---|
| Molders, | 2,103 |
| Machinists, | 1,392 |
| Pattern-makers and carpenters, | 624 |
| Blacksmiths and helpers, | 515 |
| Boiler-makers and helpers, | 255 |
| Laborers, | 1 832 |
| Boys, | 1 254 |
| Not classified, | 1,837 |
| Total, | 9,812 |

### Railroads.

| | |
|---|---|
| Master mechanics, | 80 |
| General foremen, | 63 |
| Foremen, | 2,739 |
| Road foremen of engines, | 26 |
| Clerks in all departments, | 2,988 |
| Telegraph operators, | 2,017 |
| Passenger and freight agents, | 1,775 |
| Depot and train-masters, and dispatchers, | 565 |
| Conductors—passenger and freight, | 2,707 |
| Brakemen, | 7,621 |
| Baggage-masters and porters, | 767 |
| Locomotive engineers, | 2,423 |
| Locomotive firemen, | 2,680 |
| Stationary enginemen and firemen, | 348 |
| Distributing and yard enginemen and firemen, | 1,610 |
| Blacksmiths and helpers, | 2,786 |
| Machinists and helpers, | 4 106 |
| Tinners, coppersmiths, and helpers, | 423 |
| Boiler-makers and helpers, | 1,132 |
| Carpenters, | 5,716 |
| Painters, | 870 |
| Trackmen and laborers, | 18,335 |
| Masons and quarrymen, | 422 |
| Apprentices, | 726 |
| Not classified, | 13,388 |
| Total, | 76 313 |

### Miscellaneous Industries.

| | |
|---|---|
| Foremen, | 339 |
| Skilled workmen, | 16,548 |
| Unskilled workmen, | 7,693 |
| Boys, | 1,506 |
| Not classified, | 2,419 |
| Total, | 28,505 |

### Tanneries.

| | |
|---|---|
| Tanners, | 385 |
| Beam-hands, | 938 |
| Yard-hands, | 418 |
| Curriers, splitters, and shavers, | 366 |
| Scourers, blackers, and finishers, | 582 |
| Laborers, | 685 |
| Not classified, | 2 421 |
| Total, | 5,795 |

### Textile Fabrics.

| | |
|---|---|
| Overseers, | 1.305 |
| Skilled workmen, | 11,833 |
| Unskilled workmen, | 5 862 |
| Boys under sixteen years of age, | 4 411 |
| Women and girls over fifteen years of age, | 24,525 |
| Girls under fifteen years, | 3,995 |
| Engineers, | 318 |
| Blacksmiths, | 37 |
| Carpenters, | 163 |
| Laborers, | 590 |
| Not classified, | 4.274 |
| Total, | 57,313 |
| Grand total, | 374 409 |

**AN EXHIBIT** *of the average daily wages paid to employés of various occupations throughout the State from 1875 to 1882, compiled from manufacturers' and operators' returns to the Bureau.*

| OCCUPATIONS. | 1875. | 1876. | 1877. | 1878. | 1879. | 1880. | 1881. | 1882. |
|---|---|---|---|---|---|---|---|---|
| *Anthracite coal.* | | | | | | | | |
| Miners on contract. | $3 00 | $2 97 | $1 91 | $1 97 | $2 09 | $2 71 | $2 52 | $2 52 |
| Miners on wages, | 2 40 | 2 33 | 1 78 | 1 66 | 1 63 | 1 88 | 2 05 | 2 65 |
| Laborers, inside, | 2 00 | 1 82 | 1 69 | 1 33 | 1 37 | 1 62 | 1 72 | 1 72 |
| Laborers, outside, | 1 65 | 1 56 | 1 47 | 1 21 | 1 19 | 1 30 | 1 27 | 1 27 |
| Platform men and others, | 1 66 | 1 66 | 1 51 | 1 21 | | 1 31 | 1 29 | 1 29 |
| Slate pickers, boss. | 1 40 | 1 29 | 1 06 | | 1 05 | 1 44 | 1 37 | 1 37 |
| Slate pickers, boys, | 60 | 61 | 53 | 51 | 56 | 57 | 65 | 65 |
| Door and fan boys, | 1 05 | 1 03 | 93 | 61 | 61 | 77 | 75 | 75 |
| Drivers, | 1 64 | 1 63 | 1 62 | 1 30 | 1 19 | 1 26 | 1 29 | 1 29 |
| Engineers, | 2 50 | 2 28 | 2 15 | 1 68 | 1 65 | 1 80 | 1 78 | 1 78 |
| Firemen, | | | | 1 26 | | 1 44 | 1 40 | 1 40 |
| Blacksmiths. | 2 50 | 2 28 | 2 15 | | 1 65 | 1 80 | 1 81 | 1 81 |
| Carpenters, | 2 50 | 2 28 | 2 15 | | 1 65 | 1 80 | 1 83 | 1 83 |
| Other employees, | | | | | 1 66 | 1 66 | 1 66 | 1 66 |
| *Bituminous coal.* | | | | | | | | |
| Miners. | 2 47 | 2 59 | 1 65 | 1 88 | 1 74 | 2 25 | 2 16 | 2 16 |
| Laborers, inside, | 1 90 | 1 71 | 1 64 | 1 47 | 1 42 | 1 69 | 1 81 | 1 81 |
| Laborers, outside, | 1 76 | 1 52 | 1 34 | 1 47 | 1 42 | 1 46 | 1 63 | 1 63 |
| Mule drivers, | 1 81 | 1 61 | 1 57 | 1 46 | 1 41 | 1 63 | 1 80 | 1 80 |
| Blacksmiths, | 2 29 | 2 15 | 1 80 | 1 91 | 1 75 | 1 96 | 2 16 | 2 16 |
| Carpenters, | 2 29 | 2 15 | 1 80 | 1 90 | 1 75 | 1 84 | 2 06 | 2 06 |
| Mining overseers, | 3 04 | 2 84 | 2 40 | 2 64 | 2 56 | 2 63 | 2 60 | 2 60 |
| Clerks, | | | | 2 38 | | 1 93 | 2 11 | 2 11 |
| Coke oven chargers, | | | | 1 60 | | 1 46 | 1 76 | 1 76 |
| Coke oven drawers, | | | | 1 60 | 1 55 | 1 44 | 1 74 | 1 74 |
| Boys, | 97 | 87 | 90 | 77 | 68 | 79 | 84 | 84 |
| *Blast furnaces.* | | | | | | | | |
| Foundrymen, | | | | 2 11 | 2 48 | 2 70 | 2 92 | 2 92 |
| Keepers. | | | | 1 40 | 1 50 | 1 56 | 1 75 | 1 75 |
| Keepers' helpers, | | | | 1 15 | 1 40 | 1 35 | 1 55 | 1 55 |
| Fillers, | | | | 1 15 | 1 61 | 1 33 | 1 63 | 1 63 |
| Cinderman, | | | | 1 16 | 1 32 | 1 26 | 1 43 | 1 43 |
| Barrowmen, | | | | | | 1 18 | 1 31 | 1 31 |
| Hot-blast men, | | | | 1 26 | | 1 45 | 1 62 | 1 62 |
| Weighmen, | | | | 1 40 | | 1 39 | 1 55 | 1 55 |
| Metal carriers, | | | | 1 25 | 1 41 | 1 41 | 1 68 | 1 68 |
| Engineers, | | | | 1 24 | 1 60 | 1 67 | 1 69 | 1 69 |
| Firemen, | | | | 1 06 | 1 38 | 1 30 | 1 52 | 1 52 |
| Blacksmiths, | | | | 1 34 | 1 37 | 1 63 | 1 80 | 1 80 |
| Blacksmiths' helpers, | | | | 1 08 | | 1 16 | 1 25 | 1 25 |
| Carpenters, | | | | 1 49 | 1 52 | 1 60 | 1 69 | 1 69 |
| Laborers, | | | | 96 | 1 19 | 1 05 | 1 15 | 1 15 |
| Foremen. | | | | 2 00 | | 2 11 | 2 06 | 2 06 |
| Other employees, | | | | 1 56 | 1 50 | 1 38 | 1 45 | 1 45 |
| *Bloomaries.* | | | | | | | | |
| Run-out men, | | | | | | | 3 04 | 3 04 |
| Forgemen, | | | | | | | 2 81 | 2 81 |
| Helpers, | | | | | | | 1 29 | 1 29 |
| Hammermen, | | | | | | | 2 61 | 2 61 |
| Hammermen's helpers, | | | | | | | 1 23 | 1 23 |
| Engineers, | | | | | | | 1 74 | 1 74 |
| Blacksmiths, | | | | | | | 1 63 | 1 63 |
| Carpenters, | | | | | | | 1 56 | 1 56 |
| Laborers, | | | | | | | 1 10 | 1 10 |
| Boys, | | | | | | | 60 | 60 |
| Other employees, | | | | | | | 1 58 | 1 58 |

**EASTERN DISTRICT,** *comprising the counties of Berks, Bucks, Chester, Columbia, Cumberland, Dauphin, Delaware, Lackawanna, Lancaster, Lebanon, Lehigh, Mifflin, Montgomery, Montour, Northampton, Northumberland, Perry, Philadelphia, and Schuylkill.*

| OCCUPATIONS. | 1873. | 1874. | 1875. | 1876. | 1877. | 1878. | 1879. | 1880. | 1881. | 1882. |
|---|---|---|---|---|---|---|---|---|---|---|
| *Rolling-Mills.* | | | | | | | | | | |
| Puddlers. | $4 00 | $3 60 | $3 11 | $2 78 | $2 40 | $2 40 | $2 53 | $2 80 | $3 03 | $3 03 |
| Puddlers' helpers, | 2 25 | 2 00 | 1 57 | 1 51 | 1 35 | 1 27 | 1 32 | 1 40 | 1 60 | 1 60 |
| Heaters, | 5 00 | 4 70 | 4 60 | 3 26 | 3 10 | 3 03 | 3 03 | 4 20 | 3 81 | 3 81 |
| Heaters' helpers, | 2 35 | 2 30 | 2 25 | 1 71 | 1 50 | 1 55 | 1 55 | 1 60 | 1 50 | 1 50 |
| Rollers, | 5 00 | 4 50 | 4 00 | 3 68 | 3 05 | 3 12 | 2 95 | 4 70 | 4 69 | 4 69 |
| Roughers, | 2 50 | 2 50 | 2 45 | 1 88 | 1 75 | 1 60 | 1 57 | 1 89 | 2 56 | 2 56 |
| Catchers, | 2 50 | 2 50 | 2 33 | 1 88 | 2 40 | 1 51 | 1 57 | 1 76 | 2 06 | 2 06 |
| Hookers, | 1 90 | 1 80 | 1 75 | 1 23 | 1 80 | 1 15 | 1 22 | 1 20 | 1 25 | 1 25 |
| Shearmen, | | | 1 43 | 1 67 | 1 58 | 1 40 | 1 41 | 1 55 | 1 50 | 1 50 |
| Straighteners, | | | 1 43 | 1 67 | | 1 56 | 1 56 | 1 48 | 1 50 | 1 50 |
| Engineers, | | | 2 54 | 1 87 | 2 25 | 1 72 | 1 90 | 1 90 | 2 00 | 2 00 |
| Millwrights, | | | | | | | 2 00 | 2 18 | 2 17 | 2 17 |
| Blacksmiths, | | | 2 24 | 2 06 | 1 82 | 1 73 | 1 71 | 1 75 | 1 96 | 1 96 |
| Machinists, | | | 2 56 | 2 02 | 2 52 | 2 00 | 2 08 | 2 17 | 2 17 | 2 17 |
| Carpenters, | | | 2 37 | 1 92 | 1 80 | 1 59 | 1 43 | 1 58 | 1 67 | 1 67 |
| Nailers, | | | | | | | 4 10 | | 3 64 | 3 64 |
| Feeders, | | | | | | 1 12 | 1 20 | 1 10 | 1 17 | 1 17 |
| Firemen, | | | | 1 34 | | 1 17 | 1 23 | 1 16 | 1 50 | 1 50 |
| Laborers, | | | 1 12 | 1 20 | 1 13 | 1 00 | 1 10 | 1 11 | 1 15 | 1 15 |
| Boys, | | | 75 | 80 | | 57 | 70 | 63 | 69 | 69 |

**WESTERN DISTRICT,** *comprising the counties of Allegheny, Armstrong, Beaver, Erie, Lawrence, Mercer, and Westmoreland.*

| OCCUPATIONS. | 1873. | 1874. | 1875. | 1876. | 1877. | 1878. | 1879. | 1880. | 1881. | 1882. |
|---|---|---|---|---|---|---|---|---|---|---|
| *Rolling-Mills.* | | | | | | | | | | |
| Puddlers. | $4 75 | $4 11 | $3 60 | $3 00 | $3 30 | $3 30 | $3 30 | $3 57 | $3 59 | $3 59 |
| Puddlers' helpers, | 2 95 | 2 55 | 2 25 | 1 90 | 2 00 | 2 00 | 2 00 | 2 20 | 2 23 | 2 23 |
| Heaters. | 6 10 | 5 70 | 5 60 | 4 00 | 4 00 | 4 70 | 4 70 | 5 20 | 5 01 | 5 01 |
| Heaters' helpers, | 2 60 | 2 30 | 2 00 | 1 63 | 1 63 | 1 80 | 1 74 | 1 75 | 1 74 | 1 74 |
| Rollers, | 8 50 | 8 25 | 8 00 | 7 24 | 6 50 | 6 40 | 6 40 | 7 00 | 7 24 | 7 24 |
| Roughers, | 4 20 | 3 80 | 3 30 | 2 65 | 2 25 | 2 25 | 2 70 | 3 25 | 3 15 | 3 15 |
| Catchers, | 4 25 | 3 80 | 3 30 | 2 65 | 2 25 | 2 95 | 2 70 | 3 25 | 3 36 | 3 36 |
| Hookers, | 2 00 | 1 85 | 1 75 | 1 52 | 1 25 | 1 44 | 1 60 | 1 44 | 1 50 | 1 50 |
| Shearmen, | | | 1 43 | 1 88 | 1 75 | 1 60 | 1 62 | 1 60 | 1 74 | 1 74 |
| Straighteners, | | | 1 43 | 1 88 | | 1 62 | 1 48 | 1 52 | 1 74 | 1 74 |
| Engineers, | | | 2 54 | 2 66 | 1 83 | 2 37 | 2 57 | 1 87 | 2 66 | 2 66 |
| Millwrights, | | | | | | 3 03 | 2 76 | 2 24 | 2 92 | 2 92 |
| Blacksmiths, | | | 2 24 | 2 78 | 2 55 | 2 48 | 2 44 | 1 83 | 2 67 | 2 67 |
| Machinists, | | | 2 56 | 2 64 | 2 75 | 2 51 | 2 39 | 2 50 | 2 50 | 2 50 |
| Carpenters, | | | 2 37 | 2 33 | 2 25 | 1 76 | 1 87 | 1 61 | 2 16 | 2 16 |
| Nailers, | | | | | | 6 25 | 6 00 | | 8 00 | 8 00 |
| Feeders, | | | | | 2 00 | 2 12 | 1 50 | 1 27 | 2 00 | 2 00 |
| Firemen, | | | | 1 70 | 1 66 | 1 64 | 1 55 | 1 29 | 1 74 | 1 74 |
| Laborers, | | | 1 12 | 1 28 | 1 25 | 1 12 | 1 27 | 1 14 | 1 31 | 1 31 |
| Boys, | | | 75 | 62 | 75 | 69 | 90 | 68 | 79 | 79 |

## BESSEMER STEEL WORKS.

| OCCUPATIONS. | 1880. | 1881. | 1882. |
|---|---|---|---|
| *Converting Department.* | | | |
| Superintendent, | | $8 00 | $8 00 |
| Foreman, | $5 00 | 5 19 | 5 19 |
| Blowers, | 2 50 | 3 96 | 3 96 |
| Metal handlers, | 1 37 | 2 44 | 2 44 |
| Metal wheelers, | | 2 72 | 2 72 |
| Weighmasters, | 2 00 | 3 18 | 3 18 |
| Hoist, hydraulic, | 1 62 | 2 80 | 2 80 |
| Stockers, iron, etc., | 1 87 | 2 55 | 2 55 |
| Chargers, | 2 12 | 3 83 | 3 88 |
| Iron melters, | 3 50 | 4 97 | 4 97 |
| Speigel melters, | . . | 4 93 | 4 93 |
| Speigel melters' helpers, | | 3 04 | 3 04 |
| Iron melters' helpers, | 2 25 | 2 88 | 2 88 |
| Cindermen, | 2 05 | 2 95 | 2 95 |
| Runner hands, | 1 80 | 3 32 | 3 32 |
| Converter hands, | 3 00 | 4 37 | 4 37 |
| Converter-bottom builders, | 2 30 | 3 00 | 3 00 |
| Ladle hands and pitmen, | 2 10 | 3 89 | 3 89 |
| Regulators, | . | 1 91 | 1 91 |
| Engineers, | . | 1 83 | 1 83 |
| *Blooming Department.* | | | |
| Foremen, | | 4 58 | 4 58 |
| Heaters, | 4 12 | 5 29 | 5 29 |
| Heaters' helpers, | 3 50 | 3 13 | 3 13 |
| Door hands, | | 1 50 | 1 50 |
| Buggymen, | | 3 66 | 3 66 |
| Markers, | | 1 95 | 1 95 |
| Rollers, | 2 87 | 4 15 | 4 15 |
| Assistant rollers, | 2 55 | 3 31 | 3 31 |
| Screwmen, | 2 50 | 3 62 | 3 62 |
| Catchers, | | 3 06 | 3 06 |
| Shearsmen, | 2 50 | 2 77 | 2 77 |
| Levermen, | 2 25 | 3 25 | 3 25 |
| Hammermen, | 3 75 | 3 88 | 3 88 |
| Engineers, | | 1 99 | 1 99 |
| Drillers, | 2 00 | 2 26 | 2 26 |
| Chip and filers, | 1 62 | 2 83 | 2 83 |
| Telegraphers, | | 1 93 | 1 93 |
| Straightening-press hands, | 1 75 | 1 94 | 1 94 |
| Inspectors, | 1 62 | 2 88 | 2 88 |
| Recorders, | | 2 44 | 2 44 |
| Drillsmiths, | . . . | 2 70 | 2 70 |
| Rail-loaders, | 2 12 | 2 75 | 2 75 |
| Engineers, | | 1 87 | 1 87 |
| *Rail Department.* | | | |
| Superintendent, | | 8 66 | 8 66 |
| Heaters, | 5 00 | 5 30 | 5 30 |
| Heaters' helpers, | 3 50 | 3 99 | 3 99 |
| Chargers, | 2 12 | 3 38 | 3 38 |
| Drawers, | | 3 57 | 3 57 |
| Door-hands, | 1 25 | 1 20 | 1 20 |
| Recorders, | 2 12 | 2 08 | 2 08 |
| Stockers, | 2 00 | 2 15 | 2 15 |
| Buggymen, | 2 87 | 3 06 | 3 06 |
| Roughers, | 3 12 | 5 54 | 5 54 |
| Second roughers, | 2 80 | 5 06 | 5 06 |
| Catchers, | 2 90 | 3 87 | 3 87 |
| *Rail Department*—Continued. | | | |
| Extra catchers, | $2 37 | $2 50 | $2 50 |
| Hookers, | 2 62 | 3 47 | 3 47 |
| Hot chippers, | | 3 23 | 3 23 |
| Strikers, | | 1 75 | 1 75 |
| Drag-outs, | 2 20 | 2 25 | 2 25 |
| Hydraulic hands, | | 1 70 | 1 70 |
| Clean-ups, | | 1 60 | 1 60 |
| Hot-bed hands, | 2 00 | 2 48 | 2 48 |
| Stampers, | 1 37 | 2 55 | 2 55 |
| Cold straighteners, | 4 25 | 3 89 | 3 89 |
| Gaggers, | 2 75 | 3 16 | 3 16 |
| Firemen, | | 1 60 | 1 60 |
| *Forge Department.* | | | |
| Foremen, | | 5 50 | 5 50 |
| Heaters, | 4 50 | 4 00 | 4 00 |
| Heaters' helpers, | 3 55 | 2 80 | 2 80 |
| Door hands, | 1 40 | 1 20 | 1 20 |
| Buggymen, | 2 25 | 2 45 | 2 45 |
| Hammermen, | 5 00 | 4 00 | 4 00 |
| Tongsmen, | 2 50 | 2 50 | 2 50 |
| Hookers, etc., | 2 00 | 2 50 | 2 50 |
| Engineers, | | 2 50 | 2 50 |
| *Gas-Producing Department.* | | | |
| Foremen, | 3 75 | 3 25 | 3 25 |
| Ashmen, | 1 26 | 1 60 | 1 60 |
| Firemen, | 1 63 | 1 69 | 1 69 |
| *Steam-Producing Department.* | | | |
| Foreman, | | 3 12 | 3 12 |
| Water-tenders, | 1 55 | 1 77 | 1 77 |
| Assistant water-tenders, | | 1 60 | 1 60 |
| Monkeys, | | 1 30 | 1 30 |
| Ashmen, | 1 26 | 1 40 | 1 40 |
| Coal-heavers, | | 1 30 | 1 30 |
| Firemen, | 1 63 | 1 52 | 1 52 |
| *Locomotive Department.* | | | |
| Foremen, | 3 25 | 3 26 | 3 26 |
| Weighmasters, | 2 30 | 1 52 | 1 52 |
| Hostlers, | 90 | 1 34 | 1 34 |
| Engineers, | 2 05 | 2 03 | 2 03 |
| Brakemen, | 1 51 | 1 58 | 1 58 |
| *Miscellaneous Department.* | | | |
| Machinists, | 2 25 | 2 24 | 2 24 |
| Machinists' helpers, | 1 11 | 1 32 | 1 32 |
| Blacksmiths, | 2 20 | 2 30 | 2 30 |
| Blacksmiths' helpers, | 1 11 | 1 28 | 1 28 |
| Carpenters, | 1 68 | 2 13 | 2 13 |
| Foundrymen, | 2 37 | 1 76 | 1 76 |
| Painters, | | 2 00 | 2 00 |
| Masons and bricklayers, | 1 95 | 2 34 | 2 34 |
| Masons' helpers, | 1 22 | 1 26 | 1 26 |
| Laborers, | 1 12 | 1 32 | 1 32 |
| Horses and carts, | | 2 50 | 2 50 |
| Boys, | . | 1 05 | 1 05 |

## AVERAGE DAILY WAGES OF EMPLOYEES—Continued.

| Occupations. | 1875. | 1876. | 1877. | 1878. | 1879. | 1880. | 1881. | 1882. |
|---|---|---|---|---|---|---|---|---|
| *Crucible and other Steel.* | | | | | | | | |
| Steel melters, | | | | | | | $5 57 | $5 57 |
| Steel melters' helpers, | | | | | | | 2 73 | 2 73 |
| Hammermen, | | | | | | | 3 31 | 3 31 |
| Hammermen's helpers, | | | | | | | 2 05 | 2 05 |
| Engineers, | | | | | | | 2 38 | 2 38 |
| Blacksmiths, | | | | | | | 2 47 | 2 47 |
| Carpenters, | | | | | | | 2 21 | 2 21 |
| Machinists, | | | | | | | 2 58 | 2 58 |
| Millwrights, | | | | | | | 2 58 | 2 58 |
| Firemen, | | | | | | | 1 73 | 1 73 |
| Laborers, | | | | | | | 1 39 | 1 39 |
| Shearsmen, straighteners, and bundlers, | | | | | | | 1 78 | 1 78 |
| Boys, | | | | | | | 83 | 83 |
| Wire drawers, | | | | | | | 2 62 | 2 62 |
| Other employees, | | | | | | | 2 38 | 2 38 |
| *Iron Foundries.* | | | | | | | | |
| Foremen, | $3 63 | | $4 00 | $2 62 | $2 66 | $2 65 | 3 15 | 3 15 |
| Iron molders, | 2 33 | $2 17 | 2 12 | 1 83 | 2 15 | 1 84 | 2 52 | 2 52 |
| Machinists, (best,) | 2 57 | 2 37 | 2 15 | 1 88 | 1 83 | 2 16 | 2 48 | 2 48 |
| Machinists. (ordinary,) | 2 12 | 2 01 | 1 78 | 1 50 | 1 67 | 1 61 | 2 22 | 2 22 |
| Boiler-makers, | 2 66 | 2 25 | 2 00 | 1 87 | 1 92 | | 2 14 | 2 14 |
| Riveters, | 2 58 | 2 02 | 2 00 | 1 67 | 1 88 | | 1 81 | 1 81 |
| Holders-on, | 1 64 | 1 49 | 1 45 | 1 20 | 1 20 | | 1 38 | 1 38 |
| Flangers, | 2 83 | 2 54 | 1 80 | 1 84 | 2 47 | | 2 31 | 2 31 |
| Blacksmiths, | 2 56 | 2 14 | 2 03 | 1 60 | 1 87 | 2 60 | 2 12 | 2 12 |
| Blacksmiths' helpers, | 1 48 | 1 44 | 1 30 | 1 05 | | 1 17 | 1 42 | 1 42 |
| Engineers, | 2 40 | 1 73 | 1 65 | 1 43 | 1 56 | 1 52 | 1 74 | 1 74 |
| Pattern-makers, | 2 45 | 2 13 | 2 27 | 1 62 | 1 92 | 1 99 | 2 28 | 2 28 |
| Carpenters, | 2 45 | 2 13 | 2 27 | 1 33 | 1 54 | 1 59 | 1 98 | 1 98 |
| Laborers, | 1 60 | 1 43 | 1 25 | 1 06 | 1 27 | 1 16 | 1 31 | 1 31 |
| Other employees, | 2 02 | | 1 36 | 1 56 | 1 41 | 1 68 | 1 89 | 1 89 |
| Boys, | 89 | 86 | 60 | 62 | 61 | 68 | 69 | 69 |
| *Window Glass.* | | | | | | | | |
| Foremen, | | | | | 4 00 | 3 83 | 2 91 | 2 91 |
| Blowers of double strength glass, | | | | | | 7 15 | 6 41 | 6 41 |
| Blowers of single strength glass, | | | | | 4 94 | 4 74 | 4 31 | 4 31 |
| Gatherers of double strength glass, | | | | | | 3 49 | 3 52 | 3 52 |
| Gatherers of single strength glass, | | | | | 2 65 | 2 77 | 2 86 | 2 86 |
| Flatteners, | | | | | 5 00 | 5 05 | 4 38 | 4 38 |
| Cutters, | | | | | 5 00 | 5 22 | 4 09 | 4 09 |
| Assorters of glass, | | | | | | 4 16 | 4 75 | 4 75 |
| Layers-in—flattening department, | | | | | | 2 12 | 2 20 | 2 20 |
| Layers-out—flattening department, | | | | | | 1 89 | 2 23 | 2 23 |
| Leer-tenders—flattening department, | | | | | | 1 65 | 1 59 | 1 59 |
| Batchmixers, | | | | | 1 79 | 1 71 | 1 88 | 1 88 |
| Lime-sifters, | | | | | | 1 66 | 1 72 | 1 72 |
| Sand-sifters. | | | | | | 1 75 | 1 50 | 1 50 |
| Master teazers. | | | | | 3 00 | 3 22 | 3 78 | 3 78 |
| Master teazers' helpers, | | | | | 1 74 | 1 90 | 1 95 | 1 95 |
| Teazers, | | | | | 1 74 | 1 90 | 1 76 | 1 76 |
| Coal-wheelers, | | | | | | 1 81 | 1 74 | 1 74 |
| Pot-makers, | | | | | 2 94 | 3 11 | 2 79 | 2 79 |
| Pot-makers' assistants, | | | | | 1 41 | 1 50 | 1 55 | 1 55 |
| Glass packers, | | | | | 1 91 | 2 20 | 2 37 | 2 37 |
| Glass packers' assistants, | | | | | | 1 96 | 2 00 | 2 00 |
| Laborers, | | | | | 1 38 | 1 34 | 1 30 | 1 30 |
| Teamsters, | | | | | | 1 83 | 1 92 | 1 92 |
| Other employees, | | | | | 1 59 | 1 69 | 1 46 | 1 46 |
| *Flint and Green Glassware.* | | | | | | | | |
| Pressers, first-class, | | | | | 3 66 | 4 08 | 4 36 | 4 36 |
| Pressers, second-class, | | | | | | 3 55 | 3 53 | 3 53 |
| Pressers, third-class, | | | | | | 3 02 | 2 85 | 2 85 |
| Handlers, | | | | | | 4 61 | 4 07 | 4 07 |
| Finishers, | | | | | 3 60 | 3 50 | 3 35 | 3 35 |
| Foot finishers, | | | | | | 2 72 | 3 62 | 3 62 |
| Mold, chimney, and other blowers, | | | | | 4 02 | 3 82 | 4 08 | 4 08 |
| Gatherers, | | | | | 2 00 | 1 93 | 2 02 | 2 02 |
| Snapping and carrying boys, | | | | | 84 | 75 | 79 | 79 |
| Mold makers, | | | | | 2 43 | 3 19 | 3 28 | 3 28 |
| Mold cleaners, greasers, and holders, | | | | | | 1 00 | 1 12 | 1 12 |
| Mixers, | | | | | 1 95 | 2 01 | 2 15 | 2 15 |
| Teazers, | | | | | 2 20 | 2 01 | 2 25 | 2 25 |
| Leer-tenders, | | | | | | 1 52 | 1 42 | 1 42 |
| Cutters, | | | | | 2 17 | 1 87 | 2 58 | 2 58 |
| Grinders, | | | | | | 1 37 | 1 29 | 1 29 |
| Roughers, | | | | | | 1 58 | 1 33 | 1 33 |
| Shearers, | | | | | | 2 25 | 2 46 | 2 46 |

## AVERAGE DAILY WAGES OF EMPLOYEES—Continued.

| OCCUPATIONS. | 1875. | 1876. | 1877. | 1878. | 1879. | 1880. | 1881 | 1882 |
|---|---|---|---|---|---|---|---|---|
| *Flint and Green Glassware—Continued.* | | | | | | | | |
| Stopper-makers, | | | | | | $4 00 | $5 00 | $5 00 |
| Stopper-grinders, | | | | | | 2 00 | 2 50 | 2 50 |
| Selecters, | | | | | | 1 75 | 2 25 | 2 25 |
| Engravers, | | | | | $2 27 | 2 33 | 2 70 | 2 70 |
| Mold papering, packing, and other boys, | | | | | | 65 | 64 | 64 |
| Packers, | | | | | 2 06 | 1 70 | 1 94 | 1 94 |
| Engineers, | | | | | | 2 25 | 2 28 | 2 28 |
| Laborers, | | | | | 1 53 | 1 35 | 1 37 | 1 37 |
| Other employees, | | | | | 2 03 | 2 06 | 1 98 | 1 98 |
| *Lumber.* | | | | | | | | |
| Foremen, | | | | $3 27 | 1 96 | 2 25 | 2 61 | 2 61 |
| Sawyers, | | | | 1 69 | 1 59 | 1 97 | 2 11 | 2 11 |
| Setters, edgers, and filers, | | | | 2 32 | 1 27 | 1 59 | 1 80 | 1 80 |
| Engineers, | | | | 3 17 | 1 41 | 1 64 | 1 85 | 1 85 |
| Laborers, | | | | 1 41 | 1 17 | 1 30 | 1 49 | 1 49 |
| Boys, | | | | 1 43 | 64 | 74 | 80 | 80 |
| Lath sawyers and binders, | | | | 1 50 | | 1 45 | 1 77 | 1 17 |
| Other employees, | | | | 1 36 | 1 36 | 1 59 | 1 83 | 1 83 |
| *Tanneries.* | | | | | | | | |
| Tanners, | | $1 70 | $1 58 | 1 78 | 1 55 | 1 62 | 1 45 | 1 45 |
| Beam hands, | $1 43 | 1 54 | 1 46 | 1 34 | 1 27 | 1 42 | 1 43 | 1 43 |
| Yard hands, | 1 27 | 1 32 | 1 30 | 1 11 | 1 11 | 1 24 | 1 27 | 1 27 |
| Rollers and spongers, | 1 42 | 1 48 | 1 33 | 1 25 | 1 27 | 1 34 | 1 37 | 1 37 |
| Bark grinders, | 1 37 | 1 20 | 1 13 | 1 06 | 1 06 | 1 07 | 1 23 | 1 23 |
| Laborers, | 1 40 | 1 20 | 1 13 | 1 02 | 1 04 | 1 08 | 1 29 | 1 29 |
| Engineers, | 1 45 | 1 57 | 1 62 | 1 48 | 1 28 | | 1 49 | 1 49 |
| Curriers, | | 1 73 | 1 55 | 1 62 | 1 36 | | 1 62 | 1 62 |
| Splitters, | | | 2 75 | 2 50 | 1 77 | | 2 03 | 2 03 |
| Shavers, | | 2 20 | 2 00 | 1 49 | 1 75 | | 2 08 | 2 08 |
| Table-hand scourers, | | 1 50 | 1 49 | 1 25 | 1 30 | | 1 36 | 1 36 |
| Blackers, | | 1 50 | 1 40 | 1 37 | 1 17 | | 1 87 | 1 87 |
| Finishers, | | 1 75 | 1 40 | 1 25 | 1 24 | | 1 62 | 1 62 |
| Other employees, | 1 38 | 1 44 | 1 63 | 1 51 | 1 31 | 1 53 | 1 56 | 1 56 |
| *Textile Fabrics.* | | | | | | | | |
| Overseers, | | | | 2 33 | 2 30 | 2 53 | 2 83 | 2 83 |
| Skilled workmen, | | | | 1 62 | 1 42 | 1 78 | 1 98 | 1 98 |
| Unskilled workmen, | | | | 1 19 | | 1 05 | 1 21 | 1 21 |
| Boys under sixteen years, | | | | 66 | 59 | 58 | 64 | 64 |
| Women and girls over fifteen years, | | | | 97 | 88 | 91 | 99 | 99 |
| Girls under fifteen years, | | | | 52 | 57 | 54 | 55 | 55 |
| Engineers, | | | | 2 23 | 1 70 | 1 92 | 2 17 | 2 17 |
| Blacksmiths, | | | | 2 18 | 1 70 | 1 97 | 2 10 | 2 10 |
| Carpenters, | | | | 2 04 | 1 70 | 1 92 | 2 04 | 2 04 |
| Laborers, | | | | 1 30 | | 1 20 | 1 39 | 1 39 |
| Other employees, | | | | 1 67 | 1 41 | 1 87 | 1 82 | 1 82 |
| *Miscellaneous Industries.* | | | | | | | | |
| Foremen, | | | | | 2 81 | 2 58 | 3 03 | 3 03 |
| Skilled workmen, | | | | | 1 91 | 1 82 | 2 08 | 2 08 |
| Unskilled workmen, | | | | | 1 22 | 1 18 | 1 30 | 1 30 |
| Boys, | | | | | 70 | 63 | 70 | 70 |

## AVERAGE MONTHLY WAGES OF EMPLOYEES.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Railroads.—Conducting Transportation.* | | | | | | | | |
| Clerks, | $54 39 | $53 71 | $53 41 | $47 81 | $54 65 | $52 20 | $49 07 | $50 50 |
| Chief telegraph operators, | 134 32 | 91 29 | 101 90 | 103 33 | 65 79 | 69 59 | 94 67 | 108 50 |
| Telegraph operators, | 40 70 | 44 97 | 45 11 | 36 39 | 36 18 | 39 60 | 38 85 | 41 02 |
| Passenger and freight agents, | 54 70 | 47 21 | 50 78 | 46 82 | 43 32 | 41 54 | 45 33 | 43 47 |
| Depot masters, | 61 47 | 61 68 | 72 77 | 45 33 | 69 39 | 71 42 | 73 50 | 83 21 |
| General dispatcher and train-master, | 96 20 | 89 62 | 83 36 | | 79 36 | 90 98 | 104 90 | 103 58 |
| Train-dispatchers, | 92 39 | 87 31 | 78 39 | 66 06 | 72 65 | 80 00 | 71 83 | 80 18 |
| Conductors, passenger, | 81 26 | 78 02 | 72 81 | 78 70 | 68 52 | 70 58 | 73 48 | 78 89 |
| Conductors, freight, | 65 33 | 59 41 | 64 08 | 55 64 | 54 85 | 62 70 | 63 64 | 65 87 |
| Brakemen, passenger, | 48 77 | 45 33 | 44 46 | 41 51 | 37 85 | 42 00 | 46 87 | 46 63 |
| Brakemen, freight, | 48 77 | 45 33 | 44 31 | 41 51 | 37 85 | 42 00 | 43 19 | 46 21 |
| Janitors, | | | | | 32 00 | 31 26 | 32 54 | 31 29 |
| Watchmen, | 39 07 | 39 14 | 39 13 | 37 85 | 35 00 | 32 95 | 35 39 | 39 05 |
| Baggage-masters, | 49 54 | 44 84 | 45 53 | 41 38 | 43 90 | 48 75 | 47 23 | 49 77 |
| Switch-tenders, | 35 75 | 39 23 | 39 25 | 47 08 | 35 78 | 42 27 | 39 48 | 40 22 |
| Baggage porters, | | 31 98 | | | 33 00 | 35 33 | 36 80 | 36 55 |
| Policemen, | | | | 45 00 | 43 33 | 50 80 | 46 46 | 48 22 |
| Gate and flagmen, | 29 38 | 33 66 | | | 39 00 | 40 16 | 46 44 | 45 73 |
| Cleaners, | | | 33 15 | 22 50 | 28 45 | 29 05 | 23 71 | 19 41 |

## AVERAGE MONTHLY WAGES OF EMPLOYEES—Continued.

| OCCUPATIONS. | 1875. | 1876. | 1877. | 1878. | 1879. | 1880. | 1881. | 1882. |
|---|---|---|---|---|---|---|---|---|
| *Railroads.—Conducting Transportation—Continued.* | | | | | | | | |
| Messengers, | | | | | $18 83 | $21 05 | $17 11 | $19 11 |
| Weighmasters, | $43 42 | $47 93 | $50 00 | $50 00 | 42 00 | 47 15 | 54 47 | 56 92 |
| Laborers, | | | | | 32 41 | 32 41 | 31 52 | 33 29 |
| Blacksmith, | | | | | 47 00 | 47 00 | 53 45 | 68 30 |
| Blacksmiths' helpers, | | | | | 38 00 | 38 60 | 38 70 | 39 20 |
| Warehousemen, | | | | | 31 80 | 35 70 | 36 16 | 34 58 |
| Cargo inspectors, | | | | | 41 00 | 50 00 | 46 74 | 44 00 |
| *Railroads.—Maintenance of Way.* | | | | | | | | |
| Supervisors, | | 77 50 | 90 00 | | 75 00 | 75 95 | 81 18 | 90 18 |
| Track foreman, | 50 27 | 49 95 | 46 50 | 41 33 | 43 00 | 43 18 | 47 01 | 48 13 |
| Trackmen, | 34 23 | 32 46 | 29 63 | 26 68 | 26 00 | 29 83 | 31 21 | 32 95 |
| Switchmen, | | | | | 34 00 | 39 16 | 38 46 | 35 89 |
| Conductors, work trains, | | | | | 65 00 | 69 60 | 67 68 | 67 21 |
| Flagmen, work trains, | | | | | 31 40 | 33 61 | 38 29 | 39 97 |
| Brakemen, work trains, | | | | | 33 62 | 36 84 | 41 29 | 48 83 |
| Pumpers, | | | | | 35 50 | 38 64 | 40 93 | 41 90 |
| Master carpenters, | | | | | 90 00 | 81 69 | 90 89 | 99 28 |
| Foremen, carpenters, | | 67 92 | | | 65 00 | 64 90 | 67 45 | 72 43 |
| Carpenters, | 50 18 | 52 59 | 51 32 | 44 13 | 52 00 | 46 05 | 48 94 | 53 20 |
| Foremen, laborers, | | | | | 39 00 | 51 66 | 44 82 | 50 22 |
| Laborers, | 35 56 | 35 81 | 32 23 | 30 87 | 31 20 | 29 90 | 29 83 | 32 52 |
| Foremen, masons, | | 80 08 | | | 70 20 | 73 18 | 70 87 | 74 82 |
| Masons, | 54 96 | 63 45 | 56 81 | 45 50 | 55 90 | 56 69 | 56 35 | 61 00 |
| Foremen, quarrymen, | | 60 30 | | | | 56 25 | 43 58 | 65 66 |
| Quarrymen, | | | | | 31 20 | 32 21 | 34 11 | 37 21 |
| Blacksmiths, | | | | | 65 00 | 60 70 | 53 37 | 51 18 |
| Blacksmiths' helpers, | | | | | 37 44 | 38 64 | 34 79 | 37 05 |
| Painters, | | | | | 46 80 | 45 93 | 52 60 | 49 54 |
| Telegraph repairmen, | 65 00 | 55 36 | 61 54 | 50 47 | | 44 33 | 47 84 | 42 08 |
| *Motive Power.* | | | | | | | | |
| Master mechanics, | 146 27 | 137 82 | 120 15 | 92 83 | 114 46 | 123 83 | 117 11 | 154 24 |
| General foremen, | 99 75 | 86 91 | 91 12 | 63 44 | 80 91 | 103 00 | 95 43 | 122 74 |
| Foremen, | | | | | 75 05 | 73 43 | 76 36 | 80 50 |
| Road foremen of engines, | 64 29 | 61 83 | 77 66 | 64 02 | 80 52 | 112 62 | 106 16 | 105 97 |
| Motive powers clerks, | 54 39 | | 57 76 | 47 81 | 54 58 | 74 31 | 71 22 | 76 70 |
| Engine preparers, | | | 72 00 | | 45 76 | 47 10 | 47 20 | 45 32 |
| Assistant engine preparers, | | | | | 36 76 | 40 86 | 33 60 | 34 33 |
| Car inspectors, | | 47 97 | | | 38 10 | 41 52 | 42 09 | 44 69 |
| Car cleaners, | | 31 92 | | | 27 00 | 27 63 | 29 90 | 29 74 |
| Riggers, | 59 70 | 42 25 | | | 51 30 | 50 73 | 51 01 | 50 77 |
| Watchmen, | | | | | 34 50 | 37 42 | 39 83 | 41 14 |
| Machinists, | 55 24 | 56 86 | 51 41 | 47 88 | 54 13 | 54 44 | 55 35 | 56 78 |
| Machinists' helpers, | | | 42 20 | | 36 39 | 38 81 | 32 82 | 36 75 |
| Machinists' apprentices, | | 23 53 | 33 80 | | 22 88 | 20 30 | 21 65 | 23 05 |
| Blacksmiths, | 53 83 | 57 11 | 52 18 | 50 20 | 53 70 | 56 98 | 54 92 | 55 54 |
| Blacksmiths' helpers, | 40 80 | 41 27 | 31 94 | 27 00 | 33 02 | 36 73 | 35 76 | 35 69 |
| Blacksmiths' apprentices, | | 17 94 | | | 15 00 | 14 34 | 26 61 | 26 64 |
| Boiler-makers, | 53 30 | 59 38 | 56 27 | 55 10 | 52 20 | 57 93 | 61 63 | 57 59 |
| Boiler-makers' helpers, | | 20 80 | 41 60 | | 34 50 | 37 57 | 43 45 | 34 78 |
| Tinners, | 48 19 | 59 63 | 54 63 | 44 60 | 50 40 | 55 00 | 52 85 | 55 13 |
| Tinners' helpers, | | | 39 00 | | 28 60 | 31 67 | 33 94 | 32 98 |
| Tinners' apprentices, | | | | | 26 00 | 16 81 | 27 65 | 23 81 |
| Coppersmiths, | 53 76 | 67 06 | 62 92 | 56 81 | 53 10 | 61 55 | 58 67 | 61 41 |
| Carpenters, | | | | | 46 80 | 49 62 | 47 59 | 48 25 |
| Carpenters' apprentices, | | 18 72 | | | 25 48 | 21 50 | 24 38 | 23 91 |
| Laborers, carpenter shop, | | 39 00 | | | 28 60 | 33 20 | 31 69 | 31 36 |
| Trimmers, | | | | | 52 00 | 54 12 | 52 50 | 56 51 |
| Painters, | 53 04 | 55 66 | 51 93 | 47 46 | 43 94 | 47 20 | 50 14 | 52 06 |
| Painters' apprentices, | | 18 98 | | | 18 20 | 20 50 | 22 98 | 23 43 |
| Laborers, paint shop, | | | | | 28 60 | 34 10 | 32 31 | 31 52 |
| Oil distributors, | | | 50 00 | | 34 20 | 36 57 | 38 89 | 38 97 |
| Coal men, | | | | | 32 70 | 34 03 | 33 53 | 35 93 |
| Grinders, | | | | | 33 30 | 37 20 | 50 42 | 53 77 |
| Laborers, | | | | | 28 60 | 32 05 | 31 29 | 31 79 |
| Engine cleaners, | 33 02 | 37 24 | 35 11 | 29 73 | 33 00 | 32 50 | 34 00 | 30 07 |
| Stationary engineers, | 64 74 | 51 95 | 48 00 | 49 14 | 37 80 | 49 70 | 44 72 | 50 33 |
| Stationary firemen, | | 46 28 | 44 20 | | 37 80 | 38 19 | 41 08 | 45 46 |
| Passenger enginemen, | 83 63 | 80 23 | 82 37 | 83 77 | 88 21 | 85 43 | 89 93 | 93 77 |
| Passenger firemen, | 49 93 | 46 38 | 50 19 | 40 87 | 43 80 | 49 36 | 50 12 | 49 91 |
| Freight enginemen, | 83 63 | 80 23 | 73 41 | 67 00 | 70 00 | 72 80 | 78 55 | 84 27 |
| Freight firemen, | 49 93 | 46 38 | 50 37 | | 42 00 | 44 33 | 47 82 | 47 17 |
| Distributing enginemen, | | | | | 70 00 | 71 66 | 72 07 | 70 76 |
| Distributing firemen, | | | | | 40 00 | 41 63 | 44 03 | 41 96 |
| Yard enginemen, | | | 97 20 | | 72 00 | 74 20 | 72 94 | 74 15 |
| Yard firemen, | | | 67 20 | | 42 80 | 44 89 | 45 51 | 40 62 |

## EMPLOYEES'

A TABLE *showing the average daily and yearly earnings and expenditures, Bureau for the year ended*

| No. of return. | OCCUPATION. | COUNTY. | Age. | Years in present employ. | Hours worked per day. | Number of days employed during the year. | PIECE WORK. | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Price paid per— | Number of pieces constituting a day's work. |
| 1 | Miner, (coal,) | Allegheny, | 51 | 27 | 11 | 141 | *a*$4 00 | 80 |
| 2 | Do. | do. | 38 | 3 | 12 | 150 | *a*4 00 | 75 |
| 3 | Do. | do. | 32 | 14 | 10 | 250 | *a*3 00 | 75 |
| 4 | Time-keeper, | do. | 63 | 8 | 10 | 260 | | .... |
| 5 | Miner, | Cambria, | 51 | 15 | 9 | 276 | *b*45 | 3½ |
| 6 | Do. | do. | 36 | 2 | 9 | 313 | *b*65 | 3 |
| 7 | Do. | do. | 60 | 4 | 10 | 200 | *b*55 | 3½ |
| 8 | Do. | Clarion, | 42 | 1 | 12 | 200 | *b*80 | 2 |
| 9 | Do. | Clearfield, | 34 | 8 | 10 | 300 | *b*50 | 5 |
| 10 | Do. | do. | 35 | 5 | 10 | 250 | *b*50 | 5 |
| 11 | Weighmaster, | do. | 28 | 1 | 10 | | | .... |
| 12 | Miner, | Elk, | 27 | 2 | 10 | 300 | *b*61 | 3 |
| 13 | Do. | Fayette, | 34 | 1 | 10 | 300 | *a*3 50 | 75 |
| 14 | Do. | Jefferson, | 43 | 3 | 9 | 252 | *b*75 | 3 |
| 15 | Do. | McKean, | 39 | 5 | 9 | 160 | *b*80 | 3 |
| 16 | Do. | Mercer, | 29 | 1 | 10 | 234 | *b*95 | 2 |
| 17 | Do. | Somerset, | 37 | 4 | 10 | 300 | *c*60 | 3⅓ |
| 18 | Do. (boss,) | do. | 35 | 2 | 10 | 310 | | .. |
| 19 | Do. | Tioga, | 48 | 16 | 10 | 240 | *b*60 | 3½ |
| 20 | Do. | Westmoreland, | 35 | 2 | 10 | 240 | *c*45 | 5 |
| 21 | Do. | do. | 48 | 8 | 10 | 246 | *a*3 50 | 84 |
| 22 | Do. | do. | 38 | 9 | 10 | 250 | | .... |
| 23 | Do. (foreman,) | Columbia, | 33 | 1 | 10 | | . | ... |
| 24 | Do. | Dauphin, | 38 | 17 | 10 | 280 | . | ... |
| 25 | Do. (foreman,) | do. | 46 | 12 | 10 | 308 | | .... |
| 26 | Do. | Lackawanna, | 50 | 7 | 10 | | *c*62 | 4 |
| 27 | Do. | Luzerne, | 47 | 8 | 10 | 278 | | . |
| 28 | Do. | do. | 30 | 11 | 10 | 250 | | *c*6 |
| 29 | Do. | Northumberland, | 23 | 6 | 10 | 246 | *c*75 | 3½ |
| 30 | Do. | Schuylkill, | 37 | 2 | 10 | 300 | .. | .... |
| 31 | Do. | do. | 46 | 3 | 10 | 225 | | .... |
| 32 | Blast-furnace keeper, | Mercer, | 45 | 4 | 12 | 300 | | |
| 33 | Forgemen, | Blair, | 55 | 3 | 11 | 221 | *e*5 50 | *f*1,950 |
| 34 | Do. | Columbia, | 57 | .. | 10 | 300 | | |
| 35 | Do. | Perry, | 48 | 13 | | 280 | *e*5 00 | *f*1 232 |
| 36 | Puddler, | Allegheny, | | 4 | 11 | 184 | *e*5 50 | *f*2 400 |
| 37 | Do. | do. | 41 | 8 | 11 | 160 | *e*8 00 | *f*2 050 |
| 38 | Do. | do. | 32 | 9 | 11 | 167 | *e*5 50 | *f*2,400 |
| 39 | Do. | do. | 38 | 15 | 10 | 179 | *e*5 50 | *f*2.365 |
| 40 | Do. | do. | 45 | 2 | 11 | 170 | *e*5 50 | *f*2 500 |
| 41 | Do. | do. | 48 | 8 | 10 | 176 | *e*5 50 | *f*2,500 |
| 42 | Do. | Berks, | 39 | 10 | | 242 | *e*4 25 | *f*2 600 |
| 43 | Do. | Delaware, | 28 | 8 | 11 | 225 | *e*4 35 | *f*2.625 |
| 44 | Do. | Lawrence, | 29 | . | 10 | 170 | *e*5 50 | *f*2 500 |
| 45 | Do. | Lehigh, | 42 | 3 | .. | 220 | *e*4 00 | *f*2 600 |
| 46 | Heater, | Allegheny, | 37 | 12 | 10 | 200 | *e*72½ | *e*9 |
| 47 | Roller—sheet, | do. | 28 | 7 | 7 | 168 | | |
| 48 | Do. do. | do. | 46 | 2 | 9 | 208 | .. | ... |
| 49 | Roller—rail, | Montour, | 45 | 8 | 12 | 142 | .. | .... |
| 50 | Nailer, | Cumberland, | 43 | 16 | 11 | 286 | .. | ... |
| 51 | Nail-packer, | Northumberland, | 49 | 12 | 11 | 252 | .. | .... |
| 52 | Blacksmith, | Allegheny, | 41 | 4 | 10 | 300 | | ... |
| 53 | Do. | Bradford, | 52 | 17 | 10 | 312 | | .. |
| 54 | Do. | Dauphin, | 40 | 11 | 10 | 290 | 12 00 | *2¼ |
| 55 | Bricklayer, | Allegheny, | 52 | 20 | . | 250 | | ... |
| 56 | Do. | Armstrong, | 51 | 5 | 10 | 312 | .. | .... |
| 57 | Do. | Cumberland, | 46 | 24 | 10 | 100 | ... | .... |
| 58 | Do. | Northampton, | 34 | 11 | 10 | 229 | . | ... |
| 59 | Do. | Tioga, | 57 | 30 | 10 | 200 | .. | ..... |
| 60 | Cabinet-maker, | Erie, | 28 | 9 | 10 | 295 | ... | ..... |

* Per week. *a* 100 bushels. *b* Ton. *c* Wagon. *e* Ton. *f* Pounds.

## RETURNS.

*etc., of employés in various industries, compiled from returns to the December 31, 1882.*

| Daily earnings. | Earnings for 1882. | How often are wages paid? | FAMILY. | | Earnings of family, exclusive of yourself, for the year. | Total earnings of the family, including yourself, for the year. | Total expenses for the year. | EXCESS OF | | No. of return. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Adults. | Children. | | | | Earnings over expenses. | Expenses over earnings. | |
| $3 20 | $451 20 | Monthly, | 2 | 8 | $1,026 00 | $1,477 20 | $1,230 00 | $247 20 | | 1 |
| 3 00 | 450 00 | do. | 2 | 9 | 300 00 | 750 00 | 600 00 | 150 00 | | 2 |
| 2 25 | 562 50 | do. | 2 | 3 | | 562 50 | 492 00 | 70 50 | | 3 |
| 1 67 | 433 32 | Weekly, | 2 | 1 | | 433 32 | 350 00 | 83 32 | | 4 |
| 1 57 | 433 32 | Monthly, | 2 | 7 | 550 00 | 983 32 | 780 00 | 203 32 | | 5 |
| 1 95 | 610 35 | do. | 2 | 4 | | 610 35 | 600 00 | 10 35 | | 6 |
| 1 92 | 384 00 | do. | 2 | 1 | 360 00 | 744 00 | 660 00 | 84 00 | | 7 |
| 1 60 | 320 00 | do. | 2 | 6 | | 320 00 | 400 00 | | $80 00 | 8 |
| 2 50 | 750 00 | do. | 2 | 5 | | 750 00 | 700 00 | 50 00 | | 9 |
| 2 50 | 625 00 | do. | 2 | 4 | | 625 00 | 420 00 | 205 00 | | 10 |
| | 490 00 | do. | 2 | 4 | | 490 00 | 450 00 | 40 00 | | 11 |
| 1 83 | 549 00 | do. | 2 | 3 | | 549 00 | 520 00 | 29 00 | | 12 |
| 2 62 | 786 00 | do. | 2 | 2 | | 786 00 | 250 00 | 536 00 | | 13 |
| 2 25 | 567 00 | do. | 2 | 3 | 284 00 | 851 00 | 540 00 | 310 00 | | 14 |
| 2 40 | 384 00 | do. | 2 | 7 | 75 00 | 459 00 | 459 00 | | | 15 |
| 1 90 | 444 60 | do. | 2 | 3 | | 444 60 | 360 00 | 84 00 | | 16 |
| 2 00 | 600 00 | do. | 2 | 5 | | 600 00 | 574 00 | 26 00 | | 17 |
| | 780 00 | do. | 2 | 5 | 175 00 | 955 00 | 400 00 | 555 00 | | 18 |
| 2 10 | 504 00 | do. | 2 | 7 | 720 00 | 1,224 00 | 1,000 00 | 224 00 | | 19 |
| 2 25 | 540 00 | do. | 2 | 1 | | 540 00 | 540 00 | | | 20 |
| 2 94 | 723 24 | do. | 2 | 6 | 387 00 | 1,110 24 | 1,110 24 | | | 21 |
| 2 25 | 562 50 | do. | 2 | 4 | | 562 50 | 360 00 | 202 50 | | 22 |
| | 1 080 00 | do. | 2 | 1 | | 1,080 00 | 420 00 | 660 00 | | 23 |
| 2 00 | 560 00 | do. | 2 | 2 | | 560 00 | 560 00 | | | 24 |
| | 780 00 | do. | 2 | 2 | | 780 00 | 500 00 | 280 00 | | 25 |
| 2 48 | | do. | 2 | 7 | 400 00 | | | | | 26 |
| | 764 50 | do. | 2 | 5 | 80 00 | 844 50 | 672 40 | 172 10 | | 27 |
| 2 20 | 550 00 | do. | 2 | 2 | | 550 00 | 550 00 | | | 28 |
| 2 62 | 644 52 | do. | 2 | | | 644 52 | 558 00 | 86 52 | | 29 |
| 2 50 | 750 00 | do. | 2 | 9 | 225 00 | 975 00 | 975 00 | | | 30 |
| 2 00 | 450 00 | do. | 2 | 6 | 96 00 | 546 00 | 500 00 | 46 00 | | 31 |
| 1 90 | 570 00 | Two weeks, | 2 | 7 | 10 00 | 580 00 | 580 00 | | | 32 |
| 3 04 | 671 84 | Monthly, | 2 | 6 | | 671 84 | 450 00 | 221 84 | | 33 |
| 1 10 | 330 00 | do. | 2 | 2 | | 330 00 | 300 00 | 30 00 | | 34 |
| 2 75 | 770 00 | do. | 2 | 5 | | 770 00 | 550 00 | 220 00 | | 35 |
| 3 59 | 660 56 | Two weeks, | 2 | 1 | | 660 56 | 362 00 | 298 56 | | 36 |
| 4 83 | 772 80 | do. | 2 | | | 772 80 | 700 00 | 72 80 | | 37 |
| 3 50 | 584 50 | do. | 2 | | | 584 50 | 400 00 | 184 50 | | 38 |
| 3 50 | 626 50 | do. | 2 | 6 | | 626 50 | 733 39 | | 106 89 | 39 |
| 3 75 | 637 50 | do. | 2 | 1 | 322 15 | 958 65 | | | | 40 |
| 3 75 | 660 00 | do. | 2 | 1 | | 660 00 | 400 00 | 260 00 | | 41 |
| 3 28 | 793 76 | Monthly, | 2 | 2 | 78 00 | 871 76 | 550 00 | 321 76 | | 42 |
| 3 30 | 742 50 | Weekly, | 2 | 3 | | 742 50 | 600 00 | 142 50 | | 43 |
| 3 75 | 637 50 | Two weeks, | 2 | 3 | | 637 50 | 425 00 | 212 50 | | 44 |
| 2 80 | 616 00 | Monthly, | 2 | 3 | | 616 00 | 616 00 | | | 45 |
| 6 00 | 1,200 00 | Two weeks, | 2 | 4 | | 1,200 00 | 900 00 | 300 00 | | 46 |
| 7 00 | 1,176 00 | do. | 2 | 3 | | 1,176 00 | 800 00 | 376 00 | | 47 |
| 4 62 | 962 56 | do. | 2 | | | 962 56 | 300 00 | 692 56 | | 48 |
| 3 50 | 497 00 | Monthly, | 2 | 4 | | 497 00 | 800 00 | | 303 00 | 49 |
| 7 00 | 2,002 00 | do. | 2 | 2 | | 2,002 00 | 400 00 | 1 602 00 | | 50 |
| 1 75 | 441 00 | do. | 2 | 1 | | 441 00 | 275 00 | 166 00 | | 51 |
| 3 00 | 900 00 | Two weeks, | 2 | 5 | | 900 00 | 900 00 | | | 52 |
| 2 20 | 686 40 | Monthly, | 2 | 4 | | 686 40 | 686 40 | | | 53 |
| 4 50 | 1,305 00 | do. | 2 | 6 | | 1,305 00 | 1 000 00 | 305 00 | | 54 |
| 3 00 | 750 00 | | 2 | 6 | 1,872 00 | 2,622 00 | 1,800 00 | 822 00 | | 55 |
| 3 50 | 1,092 00 | Two weeks, | 2 | 6 | | 1,092 00 | 1,092 00 | | | 56 |
| 2 50 | 250 00 | | 2 | 6 | | 250 00 | 300 00 | 50 00 | | 57 |
| 2 50 | 572 50 | Monthly, | 2 | | | 572 50 | 400 00 | 172 50 | | 58 |
| 2 00 | 400 00 | Weekly, | 2 | 3 | 80 00 | 480 00 | 400 00 | 80 00 | | 59 |
| 1 75 | 515 75 | do. | 2 | 1 | | 515 75 | 360 00 | 155 75 | | 60 |

## EMPLOYEES'

| No. of return. | OCCUPATION. | County. | Age. | Years in present employ. | Hours worked per day. | Number of days employed during the year. | PIECE WORK | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Prices paid per— | Number of pieces constituting a days' work. |
| 61 | Car inspector, | Perry, | 46 | 14 | 12 | 350 | | |
| 62 | Carpenter, | Allegheny, | 43 | 8 | 10 | 256 | | |
| 63 | Do. | Armstrong, | 42 | 20 | 10 | 280 | | |
| 64 | Do. | do. | 35 | 6 | 10 | 200 | | |
| 65 | Do. | Centre, | 38 | 17 | 10 | 239 | | |
| 66 | Do. | Chester, | 46 | | 10 | 220 | | |
| 67 | Do. | Lawrence, | 40 | 5 | 10 | 289 | | |
| 68 | Do. | Lehigh, | 46 | 4 | 11 | 280 | | |
| 69 | Do. | Lycoming, | 45 | | 10 | 300 | | |
| 70 | Do. | Montgomery, | 44 | | 10 | 300 | | |
| 71 | Do. | do. | 59 | | 10 | 100 | | |
| 72 | Do. | Montour, | 53 | 22 | 10 | 300 | | |
| 73 | Do. | Blair, | 44 | 14 | 10 | 295 | | |
| 74 | Do. | Philadelphia. | 57 | 25 | 10 | 280 | | |
| 75 | Cigar-maker, | Fayette, | 29 | 4 | 9 | 287 | | |
| 76 | Do. | Lancaster, | 46 | 1 | 10 | 290 | | |
| 77 | Do. | Lycoming. | 56 | 3 | 10 | 300 | | |
| 78 | Coach-maker, | Bedford, | 42 | 16 | 10 | 300 | | |
| 79 | Do. | Blair, | 56 | 25 | 10 | 300 | | |
| 80 | Do. | Lancaster, | 39 | 8 | 10 | 313 | | |
| 81 | Do. | Lehigh, | 43 | 20 | 11 | 275 | | |
| 82 | Driller, | Northampton, | 56 | | 10 | 150 | | |
| 83 | Do. | Philadelphia, | 30 | 6 | 10 | 310 | | |
| 84 | Engineer, stationary, | Allegheny, | 40 | 14 | 10 | 308 | | |
| 85 | Do. do. | Berks, | 30 | 3 | 12 | 350 | | |
| 86 | Do. do. | Montour, | 57 | 30 | 12 | 330 | | |
| 87 | Engineer, locomotive, | Cameron, | 35 | 8 | 10 | 300 | | |
| 88 | Do. do. | Dauphin, | 30 | 7 | 12 | 350 | | |
| 89 | Do. do. | Perry, | 50 | 20 | 12 | 294 | | |
| 90 | Fireman, | Schuylkill, | 40 | 19 | 12 | 250 | | |
| 91 | Foreman, | Fayette, | 54 | 17 | 10 | 300 | | |
| 92 | Do. | Lycoming, | 34 | 2 | 10 | 276 | | |
| 93 | Glass-blower, | Allegheny, | 38 | 8 | 8 | 200 | | |
| 94 | Do. | do. | 37 | | 10 | 200 | | |
| 95 | Do. | do. | 49 | 11 | 9 | 200 | | |
| 96 | Do. | Philadelphia, | 33 | 3 | 10 | 270 | | |
| 97 | Glass-worker, | Allegheny, | 55 | 3 | 10 | 225 | | |
| 98 | Laborer, | Huntingdon, | 46 | | 9 | 160 | | |
| 99 | Do. | Northumberland, | 36 | | 11 | 208 | | |
| 100 | Machinist, | Allegheny, | 39 | 8 | 10 | 280 | | |
| 101 | Do. | Bedford, | 38 | 8 | 10 | 300 | | |
| 102 | Do. | Clearfield, | 37 | 14 | 10 | 275 | | |
| 103 | Do. | Clinton, | 27 | 9 | 10 | 300 | | |
| 104 | Do. | Lebanon, | 37 | 14 | 10 | 300 | | |
| 105 | Do. | Perry, | 35 | 11 | 11 | 291 | | |
| 106 | Molder, | Centre, | 51 | 9 | 10 | 280 | | |
| 107 | Do. | Cumberland, | 56 | | 10 | 269 | | |
| 108 | Do. | Lehigh, | 33 | 2 | 10 | 290 | | |
| 109 | Do. | Schuylkill, | 33 | 2 | 10 | 307 | | |
| 110 | Do. | Union, | 59 | 14 | 10 | 250 | | |
| 111 | Do. | York, | 38 | | 10 | 300 | | |
| 112 | Painter, | Elk, | 25 | 4 | 10 | 300 | | |
| 113 | Do. | Franklin, | 49 | 14 | 10 | 300 | | |
| 114 | Do. | Lackawanna, | 48 | 2 | 10 | 234 | | |
| 115 | Do. | Monroe, | 42 | 3 | 10 | 313 | | |
| 116 | Paper-hanger, | Chester, | 36 | | 10 | 180 | | |
| 117 | Pattern-maker, | Northampton, | 45 | 18 | 10 | 300 | | |
| 118 | Plasterer, | Elk, | 46 | | 10 | 280 | | |
| 119 | Do. | Cumberland, | 32 | | 10 | 210 | | |
| 120 | Do. | Philadelphia, | 32 | 3 | 10 | 225 | | |
| 121 | Printer, | Lancaster, | 42 | 20 | 10 | 300 | | |
| 122 | Shoemaker, | do. | 64 | | | 307 | | |
| 123 | Do. | Philadelphia, | 27 | | 12 | 300 | | |
| 124 | Shoe-trimmer, | Schuylkill, | 28 | 9 | 10 | 290 | | |
| 125 | Stone-mason, | Berks, | 40 | | 10 | 200 | | |
| 126 | Do. | Blair, | 44 | | 10 | 200 | | |
| 127 | Do, | Chester, | 64 | | 10 | 140 | | |
| 128 | Do. | Schuylkill, | 34 | 1 | 10 | 269 | | |

**RETURNS--Continued.**

| Daily earnings. | Earnings for 1882. | How often are wages paid? | FAMILY. | | Earnings of family exclusive of yourself, for the year. | Total earnings of the family, including yourself, for the year. | Total expenses for the year | EXCESS OF | | No. of return. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Adults. | Children. | | | | Earnings over expenses. | Expenses over earnings. | |
| $1 44 | $504 00 | Monthly, | 2 | 3 | | $504 00 | $400 00 | $104 00 | | 61 |
| 2 50 | 640 00 | do. | 2 | 1 | $150 00 | 790 06 | 450 00 | 340 00 | | 62 |
| 2 50 | 700 00 | Two weeks, | 2 | 2 | | 700 00 | 400 00 | 300 00 | | 63 |
| 2 00 | 400 00 | Weekly, | 2 | 3 | | 400 00 | 400 00 | | | 64 |
| 1 75 | 418 25 | | 2 | 2 | | 418 25 | 230 00 | 188 25 | | 65 |
| 2 25 | 495 00 | Weekly, | 2 | 6 | 200 00 | 695 00 | 500 00 | 195 00 | | 66 |
| 2 75 | 794 75 | do. | 2 | 4 | | 794 75 | 500 00 | 294 75 | | 67 |
| 2 00 | 560 00 | Monthly, | 2 | 4 | 280 00 | 840 00 | 720 00 | 120 00 | | 68 |
| 2 00 | 600 00 | | 2 | 1 | | 600 00 | 300 00 | 300 00 | | 69 |
| 1 75 | 510 00 | Monthly, | 2 | 6 | | 510 00 | 510 00 | | | 70 |
| 2 50 | 250 00 | Weekly, | 1 | | | | | | | 71 |
| 1 94 | 582 00 | Monthly, | 1 | | | 582 00 | 500 00 | 82 00 | | 72 |
| 2 70 | 796 50 | do. | 2 | 4 | 750 00 | 1,546 50 | 1,250 00 | 296 50 | | 73 |
| 2 75 | 770 00 | Weekly, | 2 | 4 | 156 00 | 926 00 | | | | 74 |
| 2 00 | 574 00 | do. | 2 | 3 | | 574 00 | 475 00 | 99 00 | | 75 |
| 1 40 | 406 00 | do. | 2 | 5 | 210 00 | 616 00 | 616 00 | | | 76 |
| 1 00 | 300 00 | do. | 2 | 1 | 254 00 | 554 00 | 500 00 | 54 00 | | 77 |
| 1 00 | 300 00 | do. | 2 | 5 | | 300 00 | 300 00 | | | 78 |
| 2 00 | 600 00 | | 2 | 6 | | 600 00 | 600 00 | | | 79 |
| 2 00 | 626 00 | Weekly, | 2 | 4 | 52 00 | 678 00 | 500 00 | 178 00 | | 80 |
| 2 00 | 550 00 | | 2 | 6 | 75 00 | 625 00 | | | | 81 |
| 1 75 | 262 50 | Monthly, | 2 | 3 | | 262 50 | | | | 82 |
| 2 20 | 682 00 | Two weeks, | 2 | 3 | | 682 00 | 650 00 | 32 00 | | 83 |
| 2 25 | 693 00 | do. | 2 | 7 | | 693 00 | 468 00 | 225 00 | | 84 |
| 1 00 | 350 00 | Monthly, | 2 | 4 | | 350 00 | 362 86 | | $12 86 | 85 |
| 1 87 | 617 10 | do. | 2 | 2 | | 617 10 | 500 00 | 117 10 | | 86 |
| 2 00 | 600 00 | do. | 2 | 2 | | 600 00 | 500 00 | 100 00 | | 87 |
| 3 00 | 1,050 00 | do. | 2 | 2 | | 1 050 00 | 600 00 | 450 00 | | 88 |
| 2 80 | 823 20 | do. | 2 | 6 | | 823 20 | 600 00 | 223 20 | | 89 |
| 2 25 | 562 50 | do. | 2 | 5 | | 562 50 | 500 00 | 62 50 | | 90 |
| 2 75 | 825 00 | do. | 2 | 3 | 500 00 | 1 325 00 | 700 00 | 625 00 | | 91 |
| 2 25 | 621 00 | do. | 2 | 7 | 32 00 | 653 00 | 575 00 | 78 00 | | 92 |
| 4 00 | 800 00 | Weekly, | 2 | 3 | | 800 00 | 800 00 | | | 93 |
| 5 20 | 1,040 00 | do. | 2 | 2 | | 1,040 00 | 800 00 | 240 00 | | 94 |
| 5 00 | 1,000 00 | do. | 2 | 4 | | 1,000 00 | 800 00 | 200 00 | | 95 |
| 4 50 | 1,215 00 | do. | 2 | 4 | | 1,215 00 | 800 00 | 415 00 | | 96 |
| 2 60 | 585 00 | do. | 2 | 3 | 520 00 | 1,105 00 | 1,105 00 | | | 97 |
| 1 50 | 240 00 | Monthly, | 2 | 1 | | 240 00 | 200 00 | 40 00 | | 98 |
| 1 50 | 312 00 | Weekly, | 2 | 2 | | 312 00 | 275 00 | 37 00 | | 99 |
| 2 30 | 644 00 | Two weeks, | 2 | 5 | | 644 00 | 575 00 | 69 00 | | 100 |
| 1 60 | 480 00 | Weekly, | 2 | 6 | | 480 00 | 400 00 | 80 00 | | 101 |
| 3 00 | 825 00 | do. | 2 | 3 | 275 00 | 1,100 00 | 1 100 00 | | | 102 |
| 3 00 | 900 00 | Monthly, | 2 | | | 900 00 | 600 00 | 300 00 | | 103 |
| 2 20 | 660 00 | do. | 2 | 4 | | 660 00 | 660 00 | | | 104 |
| 2 75 | 800 25 | do. | 2 | 3 | | 800 25 | 525 50 | 274 75 | | 105 |
| 2 00 | 560 00 | do. | 2 | 2 | 130 00 | 690 00 | 480 00 | 210 00 | | 106 |
| 2 63 | 707 47 | do. | 2 | 2 | | 707 47 | 600 00 | 107 47 | | 107 |
| 1 90 | 551 00 | do. | 2 | 4 | | 551 00 | 450 00 | 101 00 | | 108 |
| 2 75 | 844 25 | do. | 2 | | | 844 25 | 520 00 | 324 25 | | 109 |
| 1 50 | 375 00 | | 2 | 4 | | 375 00 | 300 00 | 75 00 | | 110 |
| 1 50 | 450 00 | Weekly, | 2 | 1 | | 450 00 | 300 00 | 150 00 | | 111 |
| 2 50 | 750 00 | | 1 | | | 750 00 | | | | 112 |
| 2 00 | 600 00 | Weekly, | 2 | 3 | 600 00 | 1,200 00 | 600 00 | 600 00 | | 113 |
| 2 12 | 496 08 | | 2 | 2 | | 496 08 | 450 00 | 46 08 | | 114 |
| 2 50 | 782 50 | Monthly, | 2 | | | 782 50 | 550 00 | 232 50 | | 115 |
| 2 75 | 495 00 | Weekly, | 2 | 5 | | 495 00 | 495 00 | | | 116 |
| 2 50 | 750 00 | do. | 2 | 5 | 140 00 | 890 00 | 600 00 | 290 00 | | 117 |
| 3 50 | 980 00 | | 2 | 3 | | 980 00 | 700 00 | 280 00 | | 118 |
| 2 00 | 420 00 | | 2 | | | 420 00 | 275 00 | 145 00 | | 119 |
| 3 00 | 675 00 | Weekly, | 2 | 1 | | 675 00 | 670 00 | 5 00 | | 120 |
| 2 25 | 675 00 | do. | 2 | 1 | | 675 00 | 550 00 | 125 00 | | 121 |
| 85 | 260 75 | | 2 | 6 | 724 00 | 984 75 | 984 75 | | | 122 |
| 1 75 | 525 00 | Weekly, | 1 | | | 525 00 | 400 00 | 125 00 | | 123 |
| 1 35 | 391 50 | Two weeks, | 2 | | | 391 50 | 208 00 | 183 50 | | 124 |
| 1 50 | 300 00 | Monthly, | 2 | 2 | 130 00 | 430 00 | | | | 125 |
| 2 50 | 500 00 | do. | 2 | 4 | 207 00 | 707 00 | 375 00 | 332 00 | | 126 |
| 2 50 | 350 00 | do. | 2 | 1 | 125 00 | 475 00 | 450 00 | 25 00 | | 127 |
| 1 30 | 349 70 | do. | 2 | 2 | | 349 70 | | | | 128 |

## EMPLOYEES'

| No of return. | OCCUPATION. | COUNTY. | Age. | Years in present employ. | Hours worked per day. | Number of days employed during the year. | PIECE WORK. | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Price paid per— | Number of pieces constituting a day's work. |
| 129 | Stone-mason, | Union, | 40 | . . | . | 100 | . . . . | . . . . . |
| 130 | Tanner, | Monroe, | 29 | 1 | 10 | 260 | . . . . | . . . . . |
| 131 | Do. | Susquehanna, | 50 | 28 | 10 | 200 | . . . . | . . . . . |
| 132 | Do. | Tioga, | 34 | 6 | 10 | 313 | . . . . | . . . . |
| 133 | Wheelwright, | Chester, | 49 | . . | . . . | . . | . . . . | . . . . . |
| 134 | Beamer, | Delaware, | 43 | 10 | 10 | 276 | . . . . | . . . . . |
| 135 | Do. | do. | 45 | 16 | 10 | 300 | . . . . | . . . . . |
| 136 | Do. | Philadelphia, | 34 | 12 | 10 | 307 | . . . . | . . . . . |
| 137 | Carder and spinner, | Lehigh, | 43 | 10 | 10 | 306 | . . . . | . . . . . |
| 138 | Loom-fixer, | Northampton, | 42 | 14 | 11 | 300 | . . . | . . . . . |
| 139 | Operative, | Delaware, | 34 | 18 | 10 | 273 | . . . . | . . . . . |
| 140 | Warper, | do. | 47 | 6 | 10 | 300 | . . . . | . . . . |
| 141 | Weaver, | do. | 28 | 13 | 10 | 300 | . . . . | . . . . . |
| 142 | Do. | do. | 34 | 15 | 10 | 300 | . . . . | . . . . |

**RETURNS—Continued.**

| Daily earnings. | Earnings for 1882. | How often are wages paid? | FAMILY. | | Earnings of family, exclusive of yourself, for the year. | Total earnings of the family, including yourself, for the year. | Total expenses for the year. | EXCESS OF | | No. of return. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Adults. | Children. | | | | Earnings over expenses. | Expenses over earnings. | |
| $1 75 | $175 00 | Weekly, . . . . . | 2 | 2 | . . . . . | $175 00 | . . . . . . | . . . . . . | . . . . | 129 |
| 1 35 | 351 00 | Monthly, . . . . . | 2 | . . . | . . . | 351 00 | . . | | . . . . . | 130 |
| 2 00 | 400 00 | do. . . . . . | 2 | 6 | $150 00 | 550 00 | $500 00 | $50 00 | . . . . . | 131 |
| 1 75 | 547 75 | do. . . . . . | 2 | 2 | . . . | 547 75 | 400 00 | 147 75 | . . . . | 132 |
| . . . . | . . | . . . . . . . . | 2 | 4 | . . . . . . | . . | 300 00 | . . | . . . . . | 133 |
| 2 00 | 552 00 | Monthly, . . . . | 2 | 1 | . . | 552 00 | 500 00 | 52 00 | . . . . . | 134 |
| 2 00 | 600 00 | do. . . . . . | 2 | 7 | 900 00 | 1,500 00 | 1,200 00 | 300 00 | . . . . . | 135 |
| 2 25 | 690 75 | Two weeks, . . . | 2 | 3 | . . | 690 75 | . . | . . | . . . . . | 136 |
| 1 80 | 550 80 | Monthly, . . . . . | 2 | 3 | 416 00 | 969 80 | 450 00 | 519 80 | . . . . . | 137 |
| 1 50 | 450 00 | do. . . . . . | 2 | 5 | 200 00 | 650 00 | 450 00 | 200 00 | . . . . | 138 |
| 2 08 | 567 84 | do. . . . . . | 2 | 2 | . . . . . . | 567 84 | 400 00 | 167 84 | . . . . . | 139 |
| 2 00 | 600 00 | do. . . . . . | 2 | 1 | . . . . . . | 600 00 | 450 00 | 150 00 | . . . . . | 140 |
| 1 50 | 450 00 | do. . . . . . | 2 | 1 | . . . . . . | 450 00 | . . | . . . | . . . . | 141 |
| 2 00 | 600 00 | do. . . . . | 2 | 3 | . . . . . . | 600 00 | 600 00 | . . . . | . . . . . | 142 |

**AN EXHIBIT** *of the average retail prices of Groceries, Provisions, etc.,*

| COUNTY. | Flour, per barrel. | | Flour, per bag, (forty-nine pounds.) | | Tea, per pound. | | Coffee, (best Rio,) per pound. | | Sugar, (light brown,) per pound. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1881. | 1882. | 1881. | 1882. | 1881. | 1882. | 1881. | 1882 | 1881. | 1882. |
| 1. Allegheny, | $8 42 | $7 64 | $2 10 | $1 81 | $0 83 | $0 75 | $0 24 | $0 21 | $0 10 | $0 10 |
| 2. Armstrong, | 8 13 | 7 00 | 1 87 | 1 69 | 79 | 62 | 22 | 19 | 9 | 10 |
| 3. Beaver, | 8 00 | | 1 95 | | 75 | . . | 20 | . . . | 10 | |
| 4. Bedford, | 7 00 | 5 75 | 1 80 | 1 47 | | 88 | 21 | 19 | 10 | 10 |
| 5. Berks, | | | 1 89 | 1 65 | 75 | | 25 | 27 | 9 | 8 |
| 6 Blair, | 7 44 | 6 25 | 1 90 | 1 56 | 1 01 | 74 | 21 | 18 | 10 | 10 |
| 7. Bradford, | 8 30 | 6 85 | 2 17 | 1 82 | 50 | 57 | 30 | 32 | 9 | 9 |
| 8. Butler, | | | 1 75 | 1 60 | 70 | 65 | 20 | 16 | 10 | 10 |
| 9. Cambria, | 8 55 | 6 60 | 2 12 | 1 70 | 78 | 72 | 23 | 20 | 10 | 10 |
| 10. Cameron, | 8 22 | | 2 07 | 1 70 | 67 | 80 | 35 | 30 | 11 | 10 |
| 11. Centre, | 6 50 | 5 00 | 1 80 | 1 48 | 88 | 71 | 20 | 16 | 9 | 9 |
| 12. Chester, | 7 83 | 6 50 | 2 03 | 1 54 | 83 | 77 | 25 | 29 | 10 | 9 |
| 13. Clarion, | 8 37 | | 2 16 | 2 00 | 79 | 1 00 | 22 | 25 | 11 | 10 |
| 14. Clearfield, | 8 00 | 7 17 | 2 00 | 1 76 | 76 | 65 | 24 | 20 | 11 | 10 |
| 15. Clinton, | 8 50 | | 2 17 | 1 85 | 80 | 75 | 35 | 33 | 10 | 10 |
| 16. Columbia, | | 7 00 | 1 80 | 1 81 | . . . | 60 | 20 | 25 | 10 | 10 |
| 17. Cumberland, | 7 27 | 6 25 | 1 90 | 1 62 | 90 | 1 00 | 24 | 25 | 9 | 9 |
| 18. Dauphin, | | 6 62 | | 1 76 | | 62 | | 24 | | 9 |
| 19. Delaware, | 9 25 | 7 64 | 2 35 | 2 14 | 60 | 66 | 30 | 30 | 10 | 8 |
| 20. Elk, | 8 33 | 8 71 | 2 06 | 2 50 | 63 | 90 | 22 | 24 | 10 | 10 |
| 21. Erie, | . | | 2 02 | 1 50 | 65 | 62 | 23 | 15 | 9 | 8 |
| 22. Fayette, | 6 87 | 6 17 | 1 83 | 1 58 | 83 | 73 | 24 | 19 | 10 | 10 |
| 23. Franklin, | . | | | 1 65 | | 80 | | 18 | | 10 |
| 24. Huntingdon, | 7 90 | 6 50 | 1 98 | 1 65 | 70 | 80 | 23 | 22 | 10 | 10 |
| 25. Indiana, | 7 00 | | 1 75 | | 70 | | 20 | . | 11 | . . |
| 26. Jefferson, | 8 05 | 7 15 | 2 02 | 1 75 | 70 | 62 | 22 | 22 | | 10 |
| 27. Lackawanna, | 9 20 | 8 00 | 2 22 | 2 18 | 54 | 62 | 35 | 32 | 10 | 10 |
| 28. Lancaster, | 6 37 | 5 50 | | 1 50 | 50 | 87 | 25 | 26 | 9 | 8 |
| 29. Lawrence, | 8 10 | 6 50 | 1 99 | 1 62 | 94 | 97 | 23 | 23 | 10 | 9 |
| 30. Lebanon, | 7 75 | 6 25 | 1 90 | 1 56 | 62 | 57 | 20 | 20 | 9 | 9 |
| 31. Lehigh, | | 6 00 | 1 83 | 1 62 | 80 | 67 | 32 | 30 | 9 | 9 |
| 32. Luzerne, | 9 12 | 7 12 | 2 25 | 1 78 | 58 | 62 | 29 | 34 | 11 | 10 |
| 33. Lycoming, | 7 00 | 5 95 | 1 80 | 1 60 | 82 | 67 | 23 | 20 | 10 | 10 |
| 34. McKean, | 8 00 | | 2 27 | 2 10 | 85 | 80 | 32 | 35 | 11 | 11 |
| 35. Mercer, | 8 12 | 6 00 | 1 94 | 1 55 | 74 | 75 | 21 | 21 | 10 | 11 |
| 36. Monroe, | 10 50 | 8 00 | 2 58 | 1 68 | 66 | 55 | 28 | 23 | 10 | 10 |
| 37. Montgomery, | 7 75 | 5 50 | 2 00 | 1 70 | 85 | 87 | 35 | 34 | 10 | 9 |
| 38. Montour, | 8 50 | 7 33 | | 1 65 | 1 00 | 85 | 33 | 25 | 10 | 10 |
| 39. Northampton, | 8 50 | 9 50 | 2 13 | 2 17 | 50 | 85 | 22 | 29 | 10 | 9 |
| 40. Northumberland, | 8 43 | 6 00 | 2 13 | 1 74 | 56 | 50 | 25 | 20 | 10 | 9 |
| 41. Perry, | 8 05 | 7 87 | 2 02 | 1 71 | 86 | 69 | 25 | 22 | 9 | 9 |
| 42. Philadelphia, | 9 50 | 7 94 | 2 37 | 2 06 | 76 | 75 | 29 | 29 | 9 | 8 |
| 43. Schuylkill, | 8 58 | 7 67 | 2 15 | 2 05 | 61 | 51 | 29 | 22 | 10 | 9 |
| 44. Somerset, | 8 00 | 7 12 | 1 82 | 1 82 | 82 | 82 | 27 | 22 | 10 | 11 |
| 45. Sullivan, | 7 00 | | 1 80 | | 75 | | 20 | . . | 10 | |
| 46. Susquehanna, | 8 80 | 8 00 | | | 80 | 75 | 34 | 34 | 9 | 8 |
| 47. Tioga, | 8 27 | 6 47 | 2 08 | 1 61 | 63 | 59 | 26 | 24 | 10 | 10 |
| 48. Union, | 6 00 | . . . | 1 62 | 1 33 | 70 | 67 | 21 | 20 | 10 | 9 |
| 49. Warren, | 8 00 | . | 2 00 | . | 62 | . | 25 | . . | 10 | . . . |
| 50. Washington, | . | | 1 90 | | 65 | . . . | 20 | . . . | 9 | |
| 51. Westmoreland, | 8 40 | 6 45 | 2 02 | 1 61 | 70 | 66 | 24 | 20 | 10 | 10 |
| 52. York, | . . | 5 25 | . . | 1 36 | . . | 80 | | 23 | . . | 9 |

*for the years 1881 and 1882, compiled from employés' returns to the Bureau.*

| Sugar, (granulated,) per pound. | | Ham, per pound. | | Shoulder, per pound. | | Lard, per pound. | | Butter, per pound. | | Fresh beef, per pound. | | Other fresh meats, per pound. | | Average house rent, per month. | | Average number of rooms. | Number. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1881. | 1882. | 1881. | 1882. | 1881. | 1882. | 1881. | 1882. | 1881. | 1882. | 1881. | 1882. | 1881. | 1882. | 1881. | 1882. | | |
| $0 12 | $0 12 | $0 16 | $0 18 | $0 12 | $0 14 | $0 15 | $0 15 | $0 42 | $0 38 | $0 15 | $0 16 | $0 13 | $0 16 | $10 58 | $12 13 | 4 | 1 |
| 12 | 11 | 15 | 18 | 13 | 15 | 12 | 16 | 36 | 31 | 11 | 12 | 9 | 12 | 7 69 | 6 75 | 5 | 2 |
| . . | . | 15 | | 12 | | 15 | . . | 35 | . . | 15 | . | 12 | | 3 00 | . . | 3 | 3 |
| 13 | 14 | 14 | 19 | 10 | 18 | 10 | 16 | 26 | 27 | 8 | 12 | 7 | 10 | . . . | | 6 | 4 |
| 12 | 11 | 16 | 18 | 13 | 17 | 14 | 16 | 38 | 36 | 14 | 14 | 11 | 14 | . . . | 6 50 | 4 | 5 |
| 12 | 12 | 16 | 18 | 12 | 15 | 17 | 16 | 39 | 29 | 11 | 14 | 15 | 13 | | 4 50 | 6 | 6 |
| 12 | 11 | 15 | 18 | 12 | 14 | 15 | 14 | 31 | 31 | 15 | 15 | | 13 | 8 12 | 7 00 | 8 | 7 |
| 12 | 12 | 16 | 16 | 12 | 14 | 10 | 15 | 35 | 30 | 12 | 14 | 11 | 14 | 5 00 | | 6 | 8 |
| 13 | 13 | 16 | 17 | 11 | 12 | 16 | 17 | 36 | 38 | 14 | 16 | 13 | 16 | 4 62 | 7 25 | 5 | 9 |
| 12 | 12 | 14 | 18 | 11 | 14 | 15 | 16 | 35 | 28 | 13 | 16 | 13 | 15 | . | | 3 | 10 |
| 11 | 12 | 12 | 13 | 9 | 10 | 10 | 12 | 28 | 25 | 16 | 9 | 16 | 8 | | | 6 | 11 |
| 11 | 11 | 16 | 16 | 12 | 13 | 13 | 16 | 41 | 40 | 16 | 16 | 11 | 14 | 5 87 | 6 41 | 6 | 12 |
| 14 | 12 | 15 | 18 | 13 | 16 | 14 | 15 | 32 | 35 | 12 | 15 | 12 | 11 | 2 00 | 2 50 | 2 | 13 |
| 11 | 12 | 16 | 17 | 14 | 14 | 16 | 15 | 39 | 37 | 13 | 16 | 12 | 16 | 6 31 | 6 00 | 5 | 14 |
| 13 | 12 | 14 | 17 | 13 | 15 | 17 | 15 | 40 | 35 | 18 | 17 | 15 | 16 | 12 00 | 12 00 | 6 | 15 |
| 12 | 12 | 16 | 17 | 14 | 15 | 12 | 16 | 30 | 36 | 11 | 15 | | 11 | | | 6 | 16 |
| 11 | 12 | 14 | 17 | 10 | 18 | 16 | 13 | 33 | 26 | 12 | 15 | 11 | 13 | 8 66 | 4 00 | 6 | 17 |
| . | 11 | . . . | 16 | | 12 | . . . | 16 | | 36 | . | 16 | | 12 | | 9 00 | 6 | 18 |
| 11 | 10 | 16 | 18 | 14 | 14 | 15 | 16 | 50 | 43 | 18 | 19 | 13 | 15 | 13 00 | 6 26 | 5 | 19 |
| 12 | 11 | 13 | 16 | 11 | 18 | 13 | 15 | 35 | 35 | 12 | 18 | 11 | 18 | 3 00 | 3 00 | 5 | 20 |
| 11 | 10 | 13 | 15 | 11 | 13 | 15 | 15 | 29 | 28 | 11 | 11 | 12 | 12 | | | 8 | 21 |
| 12 | 13 | 16 | 17 | 13 | 14 | 18 | 17 | 39 | 32 | 11 | 15 | 11 | 12 | 8 00 | 4 25 | 5 | 22 |
| . | 11 | | 22 | . . | . . . | . | 14 | . | 25 | | 10 | | 10 | | . | 9 | 23 |
| 13 | 13 | 18 | 18 | 14 | 15 | 17 | 18 | 28 | 30 | 11 | 12 | 10 | 10 | 4 50 | . . . | 7 | 24 |
| 13 | | 12 | | 10 | | 8 | | 28 | | 8 | | 7 | | | | | 25 |
| . | 11 | 15 | 18 | 13 | 15 | 13 | 15 | 37 | 30 | 12 | 13 | 15 | 14 | 6 00 | 5 00 | 5 | 26 |
| 13 | 11 | 15 | 17 | 12 | 13 | 16 | 16 | 32 | 35 | 15 | 18 | 14 | 14 | 6 50 | 7 00 | 5 | 27 |
| 12 | 11 | 14 | 24 | 10 | 18 | 10 | 14 | 26 | 30 | 13 | 16 | 13 | 15 | 6 00 | 11 00 | 7 | 28 |
| 13 | 12 | 16 | 17 | 14 | 14 | 15 | 13 | 36 | 34 | 14 | 15 | 11 | 14 | 7 00 | 7 00 | 4 | 29 |
| 12 | 12 | 15 | 17 | 12 | 12 | 14 | 15 | 33 | 27 | 15 | 16 | . | 12 | 5 00 | 5 00 | 5 | 30 |
| 13 | 11 | 15 | 17 | 11 | 15 | 15 | 16 | 36 | 31 | 16 | 14 | 14 | 13 | 6 50 | 6 08 | 5 | 31 |
| 11 | 11 | 15 | 18 | 12 | 17 | 15 | 16 | 36 | 35 | 14 | 17 | 18 | 16 | 5 75 | 7 80 | 5 | 32 |
| 12 | 12 | 17 | 17 | 15 | 14 | 14 | 15 | 32 | 28 | 13 | 13 | 10 | 11 | . . | 5 00 | 6 | 33 |
| 13 | 14 | 15 | 18 | 14 | 14 | 16 | 17 | 34 | 37 | 12 | 18 | | . | | 3 50 | 5 | 34 |
| 12 | 12 | 13 | 17 | 13 | 15 | 15 | 15 | 34 | 31 | 12 | 14 | 10 | . . . | 5 00 | 2 50 | 3 | 35 |
| 13 | 12 | 16 | 17 | 12 | 13 | 16 | 16 | 35 | 31 | 13 | 14 | 13 | 11 | 6 00 | 7 00 | 7 | 36 |
| 14 | 12 | 13 | 15 | 12 | 14 | 15 | 16 | 45 | 45 | 14 | 17 | 15 | . | 9 00 | 7 00 | 6 | 37 |
| 12 | 12 | 14 | 16 | | 13 | 14 | 14 | 40 | 33 | 15 | 16 | . . | 16 | . . . | | 8 | 38 |
| 11 | 12 | 18 | 16 | 15 | 13 | 16 | 16 | 34 | 36 | 15 | 16 | . . . | 15 | | 8 50 | 6 | 39 |
| 11 | 11 | 16 | 17 | 11 | 13 | 16 | 17 | 39 | 38 | 13 | 16 | 13 | 13 | 6 96 | 6 66 | 6 | 40 |
| 12 | 12 | 15 | 16 | 11 | 14 | 14 | 16 | 32 | 29 | 13 | 17 | 13 | 18 | 5 07 | | 6 | 41 |
| 11 | 10 | 18 | 21 | 12 | 14 | 15 | 16 | 51 | 47 | 18 | 20 | 15 | 16 | 10 12 | 12 17 | 5 | 42 |
| 12 | 12 | 17 | 17 | 12 | 13 | 16 | 16 | 41 | 35 | 16 | 14 | 15 | 16 | 5 58 | 4 77 | 5 | 43 |
| 14 | 13 | 15 | 17 | 10 | 14 | 16 | 20 | 30 | 28 | 10 | 10 | 10 | . | . . | 3 00 | 4 | 44 |
| 13 | | 16 | | 13 | | 14 | . | 27 | | 8 | | 8 | . | . | . . | | 45 |
| 11 | 10 | 16 | 16 | 13 | 14 | 16 | 16 | 32 | 32 | 11 | 15 | | | | | | 46 |
| 12 | 11 | 16 | 16 | 14 | 11 | 15 | 16 | 32 | 32 | 11 | 13 | 15 | 11 | 5 66 | 6 00 | 9 | 47 |
| 12 | 11 | 16 | 19 | 12 | 15 | 11 | 15 | 29 | 27 | 10 | 12 | 13 | 10 | . | . | 5 | 48 |
| 10 | | 14 | | 13 | | 14 | . . | 30 | | 12 | . . | 11 | | . | . | . . | 49 |
| 11 | . | 17 | | 13 | | 16 | . | 38 | | 12 | | | | | | | 50 |
| 11 | 12 | 15 | 16 | 12 | 12 | 14 | 15 | 38 | 35 | 12 | 13 | 14 | 13 | 6 66 | 7 00 | 4 | 51 |
| . . . | 11 | . . . | 16 | . . . | 12 | . . | 14 | | 29 | . . . | 14 | . . . | 14 | . . | . . | 6 | 52 |

# STATISTICS OF MANUFACTURES.

[From Compendium of Tenth Census.]

**MANUFACTURES** *by totals of States and Territories for the censuses of 1880 and 1870.*

**1880.**

| STATES AND TERRITORIES. | Number of establishments. | Capital. | AVERAGE NUMBER OF HANDS EMPLOYED | | | Total amount paid in wages during the year. | Value of materials. | Value of products. |
|---|---|---|---|---|---|---|---|---|
| | | | Males above 16 years. | Females above 15 years. | Children and youths. | | | |
| The United States, | 253,852 | $2,790,272,606 | 2,025,335 | 531 639 | 181,921 | $947,953,795 | $3,396,823 549 | $5,369,579,191 |
| Alabama, | 2,070 | $9,668,008 | 8 368 | 842 | 809 | 2,500,504 | 8 545 520 | 13,565,504 |
| Arizona, | 66 | 272,600 | 216 | 2 | 2 | 111.180 | 380,023 | 618,365 |
| Arkansas, | 1 202 | 2,953.130 | 4 307 | 90 | 160 | 925,358 | 4.392 080 | 6 756 159 |
| California, | 5 885 | 61,243,784 | 38 311 | 3 922 | 1 460 | 21,065.905 | 72,607.709 | 116 218,973 |
| Colorado, | 599 | 4,311,714 | 4.652 | 266 | 156 | 2,314,427 | 8,806,762 | 14,260,159 |
| Connecticut, | 4.488 | 120.480,275 | 75 619 | 28 851 | 8 445 | 43 501,518 | 102,183 341 | 185,697 211 |
| Dakota, | 251 | 771.428 | 854 | 8 | 6 | 339,375 | 1.523 761 | 2,373,970 |
| Delaware. | 746 | 15 655.822 | 10 250 | 1,426 | 962 | 4 267,349 | 12,828 461 | 20,514,438 |
| Dist. of Columbia. | 971 | 5 552,526 | 5,496 | 1,389 | 261 | 3,924,612 | 5.365 400 | 11,882,316 |
| Florida, | 426 | 3,210,680 | 4 564 | 558 | 382 | 1,270,875 | 3 040 119 | 5,546 448 |
| Georgia, | 3 593 | 20,672,410 | 18 937 | 3,619 | 2,319 | 5,266,152 | 24.143.939 | 36,440,948 |
| Idaho, | 162 | 677.215 | 374 | 8 | 6 | 136.326 | 844 874 | 1.271.317 |
| Illinois, | 14 549 | 140 652 066 | 120 558 | 15,233 | 8.936 | 57,429,085 | 289.843,907 | 414 864 673 |
| Indiana, | 11,198 | 65,742 962 | 62 072 | 3 615 | 3 821 | 21,960,888 | 100 262,917 | 148 006 411 |
| Iowa, | 6,921 | 33 987,886 | 25,382 | 1,431 | 1 559 | 9.725 962 | 48 704,311 | 71 045 926 |
| Kansas, | 2,803 | 11,192.315 | 11,139 | 392 | 531 | 3,995 010 | 21,453 141 | 30,843,777 |
| Kentucky, | 5,328 | 45,813,039 | 30,949 | 3,529 | 2,913 | 11,657,844 | 47,461.890 | 75 483,377 |
| Louisiana, | 1.553 | 11 462 468 | 10,171 | 1,335 | 661 | 4,360 371 | 14 442 506 | 24,205 183 |
| Maine, | 4,481 | 49,988 171 | 35 431 | 13,777 | 3,746 | 13,623,318 | 51,120,708 | 79,829,793 |
| Maryland, | 6 787 | 58,742,384 | 46 698 | 21,700 | 6 547 | 18,904 965 | 66 937.846 | 106,780,563 |
| Massachusetts, | 14,352 | 303 806,185 | 228 834 | 105,976 | 17 445 | 128,315 362 | 386 972,655 | 631,135 234 |
| Michigan, | 8,873 | 92,930,959 | 68 445 | 4 784 | 4 362 | 25 313,682 | 92,900,269 | 150 715 025 |
| Minnesota, | 3 493 | 31,004,811 | 18,937 | 1 636 | 674 | 8 613.094 | 55,660.681 | 76,065,198 |
| Mississippi, | 1,479 | 4,727,600 | 4 887 | 413 | 527 | 1,192,645 | 4 667,183 | 7 518 302 |
| Missouri, | 8,592 | 72 507 844 | 54,200 | 5,474 | 4,321 | 24,309,716 | 110,798,392 | 165 336,205 |
| Montana, | 196 | 809 390 | 574 | 3 | 1 | 318,759 | 1,006,442 | 1.835,867 |
| Nebraska, | 1,403 | 4 881 150 | 4,464 | 120 | 209 | 1,742.311 | 8 208 478 | 12 627,336 |
| Nevada, | 184 | 1 323,300 | 556 | 5 | 16 | 461,807 | 1.049,794 | 2.179,626 |
| New Hampshire, | 3,181 | 51 112 263 | 29 356 | 16.184 | 3 291 | 14 814 793 | 43.552,462 | 73 978,028 |
| New Jersey, | 7,128 | 106,226,593 | 86,787 | 27,099 | 12,152 | 46,083 045 | 165,285,779 | 254 380,236 |
| New Mexico, | 144 | 463 275 | 553 | | 4 | 218,731 | 871 352 | 1 284,846 |
| New York, | 42 739 | 514,246.575 | 364,549 | 137,455 | 29,529 | 198.634 029 | 679.612.545 | 1,080 696,596 |
| North Carolina, | 3,802 | 13 045.639 | 12 818 | 2 939 | 2 352 | 2,740 768 | 13.090,937 | 20,095 037 |
| Ohio, | 20,699 | 188,939 614 | 152 217 | 18,563 | 12 829 | 62 103,800 | 215,334,258 | 348,298,390 |
| Oregon, | 1,080 | 6 312,056 | 3,280 | 96 | 97 | 1,667,046 | 6,954 436 | 10,931,232 |
| Pennsylvania, | 31,232 | 474,510,993 | 284.359 | 73,046 | 29 667 | 134 055 904 | 465,020 563 | 744,818,445 |
| Rhode Island, | 2,205 | 75,575 943 | 37 060 | 18,270 | 7,548 | 21.355.619 | 58,103,443 | 104 163,621 |
| South Carolina, | 2.078 | 11,205 894 | 19 987 | 1 023 | 1 118 | 2 836,289 | 9 885 538 | 16,738 008 |
| Tennessee, | 4.326 | 20,092.845 | 19,575 | 1,196 | 1,674 | 5 254,775 | 23 834 262 | 37,074 886 |
| Texas, | 2,996 | 9,245,561 | 11,645 | 116 | 398 | 3 343,087 | 12,956,269 | 20,719,928 |
| Utah, | 640 | 2.656.657 | 2 042 | 221 | 232 | 858 863 | 2 561,737 | 4 324.992 |
| Vermont, | 2 874 | 23,265.224 | 14 438 | 2 271 | 831 | 5 164 479 | 18.330,677 | 31,354,366 |
| Virginia, | 5,710 | 26 968,990 | 28,779 | 6,144 | 5,261 | 7,425.261 | 32,883.933 | 51.780,992 |
| Washington. | 261 | 3 202,497 | 1,110 | 25 | 12 | 532,226 | 1,967,469 | 3,250,134 |
| West Virginia, | 2,375 | 13,883 390 | 12,900 | 346 | 1,065 | 4,313 965 | 14 027,388 | 22 867 126 |
| Wisconsin, | 7,674 | 73,821 802 | 48 255 | 6 241 | 2 613 | 18,814 917 | 85.796,178 | 128,255.480 |
| Wyoming, | 57 | 364,673 | 380 | | 11 | 187,798 | 601,214 | 898,494 |

## **MANUFACTURES** *by totals of States and Territories*—Continued.

### 1870.

| STATES AND TERRITORIES. | Number of establishments. | Capital. | AVERAGE NUMBER OF HANDS EMPLOYED. | | | Total amount paid in wages during the year. | Value of materials. | Value of products. |
|---|---|---|---|---|---|---|---|---|
| | | | Males above 16 years. | Females above 15 years. | Children and youths | | | |
| The United States, | 252 148 | $2, 118 208 769 | 1,615 598 | 323 770 | 114. 628 | $775 584 343 | $2 488, 427, 242 | $4, 232, 325 442 |
| Alabama, . . . . | 2, 188 | $5 714, 052 | 7, 196 | 664 | 388 | $2, 227, 968 | $7. 592. 837 | $13 040, 644 |
| Arizona, . . . . | 18 | 150. 700 | 84 | | | 45 580 | 110. 090 | 185, 410 |
| Arkansas, . . . . | 1, 079 | 1, 782. 913 | 3. 077 | 47 | 82 | 673 963 | 2. 536 998 | 4 629 234 |
| California, . . . | 3, 984 | 39, 728 202 | 24, 040 | 873 | 479 | 13 136. 722 | 35. 351. 193 | 66, 594, 556 |
| Colorado, . . | 256 | 2, 835 605 | 874 | 2 | | 528, 221 | 1, 593 280 | 2, 852, 820 |
| Connecticut, . . | 5, 128 | 95, 281 278 | 61, 684 | 20. 810 | 7, 029 | 38, 987, 187 | 86. 419. 579 | 161, 065, 474 |
| Dakota, . . | 17 | 79 200 | 89 | | 2 | 21 106 | 105 997 | 178 570 |
| Delaware, | 800 | 10. 839. 093 | 7, 705 | 1 199 | 806 | 3 692. 195 | 10 206, 397 | 16 791 382 |
| Dist. of Columbia, | 952 | 5, 021, 925 | 4, 333 | 216 | 136 | 2, 007 600 | 4 754. 883 | 9. 292, 173 |
| Florida, . . . | 659 | 1, 679, 930 | 2, 670 | 20 | 59 | 989, 592 | 2 330 873 | 4 685, 403 |
| Georgia, . . . . . | 3 836 | 13. 930. 125 | 15. 078 | 1, 498 | 1, 295 | 4, 844. 508 | 18 583, 731 | 31, 196, 115 |
| Idaho, . . . . . | 101 | 742, 300 | 264 | | 1 | 112. 372 | 691, 785 | 1. 047, 624 |
| Illinois, . . . . . . | 12 597 | 94 368 057 | 73 045 | 6, 717 | 3 217 | 31. 100 244 | 127, 600, 077 | 205, 620, 672 |
| Indiana, . . . . . | 11. 847 | 52, 052. 425 | 54 412 | 2. 272 | 2 168 | 18 366. 780 | 63. 135, 492 | 108. 617 278 |
| Iowa, . . . . . | 6, 566 | 22, 420. 183 | 23 395 | 951 | 686 | 6 893 292 | 27. 682. 096 | 46, 534, 322 |
| Kansas, . . . . . | 1, 477 | 4 319 060 | 6, 599 | 118 | 127 | 2 377, 511 | 6. 112, 163 | 11. 775 833 |
| Kentucky, . . . | 5. 390 | 29 277 809 | 27 687 | 1 159 | 1. 790 | 9 444 524 | 29, 497 535 | 54 625. 809 |
| Louisiana, . . . | 2, 557 | 18 313, 974 | 23. 637 | 4, 210 | 2 224 | 4 593 470 | 12 412, 023 | 24 161, 905 |
| Maine, . . . . . | 5. 550 | 39. 796, 190 | 34 310 | 13, 448 | 1. 422 | 14. 282. 205 | 49 379 757 | 79. 497. 521 |
| Maryland, . . . | 5, 812 | 36, 438, 729 | 34, 061 | 8, 278 | 2, 521 | 12, 682 817 | 46, 897, 032 | 76, 593, 613 |
| Massachusetts, . . | 13 212 | 231 677. 862 | 179. 032 | 86, 229 | 14 119 | 118 051, 886 | 334, 413, 982 | 553. 912. 568 |
| Michigan, . | 9, 455 | 71 712 283 | 58, 347 | 2 941 | 2, 406 | 21. 205 355 | 68. 142. 515 | 118 394, 676 |
| Minnesota, . . . . | 2. 270 | 11, 993 729 | 10 892 | 259 | 139 | 4, 052 837 | 13. 842. 902 | 23, 110, 700 |
| Mississippi, . . . | 1, 731 | 4. 501 714 | 5, 500 | 191 | 250 | 1 547 428 | 4. 364. 206 | 8, 154 758 |
| Missouri, . . . . . | 11, 871 | 80, 257, 244 | 55, 904 | 3, 884 | 5, 566 | 31, 055 445 | 115 533, 269 | 206, 213, 429 |
| Montana, . . . . . | 201 | 1, 794 300 | 697 | 2 | 2 | 370, 843 | 1, 316, 331 | 2. 494. 511 |
| Nebraska, . . . . | 670 | 2. 169 963 | 2 558 | 81 | 26 | 1. 429, 913 | 2. 902 074 | 5. 738, 512 |
| Nevada, | 330 | 5, 127, 790 | 2 856 | 3 | | 2, 498, 473 | 10 315. 984 | 15. 870, 539 |
| New Hampshire, | 3, 342 | 36. 023 743 | 25 829 | 12 775 | 2 179 | 13. 823 091 | 44. 577 967 | 71 038, 249 |
| New Jersey, . . | 6, 636 | 79, 606, 719 | 58. 115 | 11, 198 | 6, 239 | 32 648, 409 | 103, 415, 245 | 169, 237, 732 |
| New Mexico, . . | 182 | 1, 450 695 | 423 | 1 | 3 | 167. 281 | 880, 957 | 1, 489, 868 |
| New York, . | 36 206 | 366 994. 320 | 267. 378 | 63, 795 | 20, 627 | 142, 466. 758 | 452 065. 452 | 785. 194, 651 |
| North Carolina, . | 3, 642 | 8, 140 473 | 11, 339 | 1 422 | 861 | 2 195, 711 | 12 824 693 | 19, 021, 327 |
| Ohio, . . . . | 22, 773 | 141 923. 964 | 119, 686 | 11, 575 | 5, 941 | 49 066. 488 | 157. 131, 697 | 269, 713, 610 |
| Oregon, . . . . . | 969 | 4, 376 849 | 2, 753 | 67 | 64 | 1 120, 173 | 3, 419, 756 | 6, 877, 387 |
| Pennsylvania, . | 37, 200 | 406, 821, 845 | 256, 543 | 43 712 | 19 232 | 127. 976 594 | 421 197. 673 | 711 894. 344 |
| Rhode Island, . | 1 850 | 66 557. 322 | 28, 804 | 14 752 | 5, 861 | 19 354 256 | 73 154 109 | 111. 418, 354 |
| South Carolina, . | 1, 584 | 5, 400, 418 | 7. 099 | 578 | 464 | 1. 543 715 | 5 855. 736 | 9, 858, 981 |
| Tennessee, . . . | 5, 317 | 15, 595 295 | 17. 663 | 1, 089 | 660 | 5, 390, 630 | 19, 657, 027 | 34 362, 636 |
| Texas, . . . . . | 2 399 | 5 284, 110 | 7, 450 | 157 | 320 | 1, 787 835 | 6, 273, 193 | 11, 517, 302 |
| Utah, . . . . | 533 | 1 391, 898 | 1, 465 | 43 | 26 | 395 365 | 1 238 252 | 2. 343 019 |
| Vermont, . . . . | 3, 270 | 20 329 637 | 16, 301 | 1, 872 | 513 | 6 264 581 | 17 007. 769 | 32. 184, 606 |
| Virginia, . . | 5. 933 | 18, 455. 400 | 22, 175 | 2, 259 | 2, 540 | 5, 343, 099 | 23, 832, 384 | 38, 364 322 |
| Washington, | 269 | 1, 893, 674 | 1, 025 | 1 | | 574. 936 | 1, 435, 128 | 2 851. 052 |
| West Virginia, . | 2, 444 | 11. 084, 520 | 10, 728 | 287 | 657 | 4 322 164 | 14 503. 701 | 24, 102, 201 |
| Wisconsin, . . . | 7, 013 | 41, 981. 872 | 40, 296 | 2, 114 | 1 500 | 13 575 642 | 45 851, 266 | 77, 214 326 |
| Wyoming, . . . | 32 | 889, 400 | 500 | 1 | 1 | 347, 578 | 280, 156 | 765, 424 |

## MANUFACTURES OF PENNSYLNANIA FOR THE CENSUS FOR 1880.

NOTE.—In the construction of Table B, to save space, two classes of industries have been grouped as "all other industries:" (1) Those which may be called "neighborhood industries," *i. e.*, when the production is presumably for local use and consumption. These industries are blacksmithing; custom boot and shoe making and repairing; carpentering; dentistry, mechanical; lock and gun-smithing; masonry—brick and stone; painting and paper-hanging; photographing; plumbing and gas-fitting; watch and clock repairing; and wheel-wrighting. (2) All industries whose aggregate annual product in any State or Territory does not equal $250,000 in value.

### TABLE A.—*By totals of counties.*

| COUNTIES. | Number of establishments. | Capital. | AVERAGE NUMBER OF HANDS EMPLOYED. | | | Total amount paid in wages during the year. | Materials. | Products. |
|---|---|---|---|---|---|---|---|---|
| | | | Males above sixteen years. | Females above fifteen years. | Children and youths. | | | |
| The State, | 31,232 | $474,510 993 | 284,359 | 73,046 | 29,667 | $134,055,904 | $465,020,563 | $744,818.445 |
| Adams, | 276 | $486 770 | 394 | 44 | 19 | $59.329 | $621 937 | $876.130 |
| Allegheny, | 1,895 | 70,641.426 | 42,815 | 2 361 | 3,995 | 22,371.951 | 61 739 293 | 105 272 739 |
| Armstrong, | 200 | 1,918.656 | 975 | 60 | 76 | 436 951 | 1.348 564 | 2,328 557 |
| Beaver, | 180 | 2,872,565 | 2,321 | 162 | 398 | 962 750 | 2,325 797 | 4,054,638 |
| Bedford, | 254 | 1,369,993 | 587 | 3 | 20 | 155,868 | 1,213,992 | 1,747,617 |
| Berks, | 1,044 | 12.522.140 | 8 307 | 890 | 811 | 3,077 919 | 13.026 331 | 20.143 164 |
| Blair, | 254 | 3 017.563 | 2 068 | 28 | 96 | 677.371 | 2.752,243 | 4.233 552 |
| Bradford, | 406 | 1.910.434 | 1 585 | 26 | 63 | 527,421 | 2 506 503 | 3 700.801 |
| Bucks, | 591 | 3,039 014 | 2,334 | 926 | 349 | 904 915 | 4 033,627 | 6,208 209 |
| Butler, | 262 | 744,580 | 521 | 24 | 11 | 148,794 | 695,930 | 1,080,290 |
| Cambria, | 272 | 9,964 245 | 4,242 | 139 | 260 | 1,860 860 | 9,056,377 | 16,150,865 |
| Cameron, | 24 | 594,500 | 191 | . . . . | 10 | 60.331 | 693,880 | 1.017.701 |
| Carbon, | 89 | 980 865 | 665 | 2 | 25 | 188 502 | 861,758 | 1,400 870 |
| Centre, | 345 | 3,165.470 | 1,655 | 9 | 106 | 563,569 | 2.337.684 | 3,591,327 |
| Chester, | 737 | 6 411,853 | 4 141 | 389 | 331 | 1,749 350 | 6,674 978 | 10,404,331 |
| Clarion, | 228 | 1 168.807 | 632 | 1 | 18 | 143.616 | 628.484 | 992 582 |
| Clearfield, | 261 | 2,778 227 | 1 230 | 11 | 39 | 366 147 | 1.661,850 | 2.584.339 |
| Clinton, | 186 | 1.405.183 | 856 | 5 | 40 | 239 897 | 1,164.089 | 1 850,788 |
| Columbia, | 221 | 1.219,505 | 842 | 37 | 18 | 260 024 | 1.147 040 | 1 746.084 |
| Crawford, | 474 | 2,852 041 | 2 222 | 26 | 71 | 742,834 | 2,797 941 | 4,373,854 |
| Cumberland, | 308 | 2,266 409 | 1.658 | 189 | 45 | 535.068 | 1,727 681 | 2,850.640 |
| Dauphin, | 614 | 9,817 959 | 5.777 | 294 | 260 | 2 044 189 | 10 443.042 | 15 594,115 |
| Delaware, | 416 | 14 256 720 | 6,569 | 2 835 | 1.788 | 3,839 838 | 11 262 964 | 19.601.493 |
| Elk, | 92 | 2,362,310 | 1 102 | | . | 252 384 | 1,517,559 | 2,414.791 |
| Erie, | 559 | 6 424,413 | 4,584 | 257 | 397 | 1,869,466 | 6,646,427 | 10,463,906 |
| Fayette, | 274 | 4.157,207 | 2,926 | 21 | 77 | 1,221,785 | 2 857.608 | 5,004.560 |
| Forest, | 25 | 1,162 150 | 322 | 3 | 2 | 91 672 | 416 897 | 613.631 |
| Franklin, | 403 | 2 003.679 | 1.489 | 48 | 46 | 391 161 | 1,872,975 | 2,825 138 |
| Fulton, | 68 | 239.868 | 104 | . . | . . | 17 170 | 223.107 | 296 887 |
| Greene, | 127 | 428,105 | 324 | 7 | 13 | 70,855 | 433 127 | 626,272 |
| Huntingdon, | 245 | 3 267 613 | 917 | 17 | 30 | 230 245 | 1,871 761 | 2.496 918 |
| Indiana, | 279 | 890.409 | 655 | 16 | 53 | 169 741 | 825.474 | 1,252 325 |
| Jefferson, | 189 | 1,282 650 | 557 | 4 | 19 | 113 412 | 679 684 | 1.003 145 |
| Juniata, | 93 | 224.170 | 153 | 1 | 3 | 25,578 | 243,023 | 325,142 |
| Lackawanna, | 352 | 5 616,017 | 3 653 | 472 | 203 | 1,558,374 | 8,105,156 | 10,684.179 |
| Lancaster, | 1 437 | 10 481,798 | 6 848 | 1,334 | 658 | 2,250,226 | 9,573 262 | 14.809.330 |
| Lawrence, | 167 | 2 192 765 | 1,586 | 37 | 88 | 717.914 | 2,801 664 | 4 101.758 |
| Lebanon, | 275 | 2,617 950 | 1.837 | 24 | 44 | 551,010 | 2,857,277 | 4.179 082 |
| Lehigh, | 473 | 12 850 472 | 4 790 | 576 | 377 | 1 690.776 | 9 352,199 | 14 097.475 |
| Luzerne, | 400 | 3 706 963 | 1,963 | 239 | 79 | 687,458 | 2.733,317 | 4,397,075 |
| Lycoming, | 612 | 6 968 462 | 4 110 | 149 | 251 | 1,221.510 | 5.880 083 | 9,184,295 |
| McKean, | 241 | 1,470.575 | 1 567 | 12 | 10 | 585.241 | 1.729.466 | 2,991 407 |
| Mercer, | 349 | 3 796 641 | 2,854 | 30 | 200 | 1,170,945 | 5.377.565 | 7.952.874 |
| Mifflin, | 169 | 1 378 080 | 886 | 16 | 36 | 298 472 | 1,527.681 | 2,298,170 |
| Monroe, | 131 | 1,604,625 | 707 | 57 | 61 | 252,836 | 1,662,199 | 2,331.884 |

### TABLE A—Continued.

| COUNTIES. | Number of establishments. | Capital. | AVERAGE NUMBER OF HANDS EMPLOYED. Males above sixteen years. | Females above fifteen years. | Children and youths. | Total amount paid in wages during the year. | Materials. | Products. |
|---|---|---|---|---|---|---|---|---|
| Montgomery, | 840 | $13.789.461 | 7,459 | 3,073 | 1,107 | $3,596 208 | $13,189.707 | $20,656,993 |
| Montour, | 113 | 2.387,902 | 1.575 | 1 | 151 | 573.196 | 2.493 840 | 3 349 376 |
| Northampton, | 531 | 9,955.966 | 5 264 | 318 | 302 | 1.922 027 | 9,272.417 | 13.931 276 |
| Northumberland, | 226 | 2,023,575 | 1,600 | 16 | 96 | 540,791 | 2,341.762 | 3 399,197 |
| Perry, | 204 | 1 358,835 | 850 | 7 | 35 | 274,250 | 1,571,432 | 2,205,048 |
| Philadelphia, | 8 567 | 187,148 857 | 113,075 | 56,818 | 15,634 | 64,265,966 | 199,155.477 | 324,342 935 |
| Pike, | 46 | 311 900 | 239 | | 7 | 75.862 | 267.884 | 454 990 |
| Potter. | 94 | 206.107 | 343 | 4 | .... | 48.016 | 320 006 | 440.022 |
| Schuylkill, | 480 | 4 854.058 | 3,028 | 251 | 123 | 1,016.641 | 4,169,130 | 6,047 336 |
| Snyder, | 115 | 355,068 | 187 | 1 | 10 | 38 623 | 465 280 | 629,007 |
| Somerset, | 348 | 839 071 | 628 | 15 | 47 | 113 483 | 719,314 | 1,089,719 |
| Sullivan, | 60 | 858.420 | 342 | .. | 1 | 95.010 | 744 342 | 1,004 443 |
| Susquehanna, | 332 | 2,026 983 | 1.161 | 33 | 10 | 309,163 | 2 484.482 | 3,569 796 |
| Tioga, | 285 | 1,818 085 | 1 308 | 11 | 14 | 321 257 | 2,294.697 | 3,165.656 |
| Union, | 130 | 678,984 | 385 | 32 | 10 | 93,117 | 519,996 | 866,437 |
| Venango, | 136 | 782 856 | 830 | 17 | 17 | 268 795 | 841.166 | 1 421.920 |
| Warren, | 267 | 2,785,055 | 1,829 | 27 | 43 | 510.221 | 2,894 313 | 4,197 281 |
| Washington, | 314 | 985 364 | 699 | 13 | 16 | 257,163 | 1,227.144 | 1.810.581 |
| Wayne, | 282 | 2.830 037 | 1.576 | 64 | 97 | 506 864 | 2.127,343 | 3,458.441 |
| Westmoreland, | 382 | 3,714.462 | 2,277 | 60 | 166 | 885,162 | 2,810,875 | 4,978,538 |
| Wyoming, | 124 | 730,725 | 362 | 1 | 4 | 94 444 | 1,278.277 | 1,794 958 |
| York, | 859 | 3,537,375 | 2,821 | 453 | 281 | 893,920 | 3,922,183 | 5,879,565 |

**TABLE B.**—*Pennsylvania, by selected industries.*

| MECHANICAL AND MANUFACTURING INDUSTRIES. | Number of establishments. | Capital. | AVERAGE NO OF HANDS EMPLOYED. | | | Total amount paid in wages during the year. | Materials. | Products. |
|---|---|---|---|---|---|---|---|---|
| | | | Males above 16 years. | Females above 15 years. | Children and youths. | | | |
| All industries, . . . . | 31, 232 | $474, 510, 993 | 284, 359 | 73, 046 | 29, 667 | $134 055 904 | $465, 020, 563 | $744, 818, 445 |
| Agricultural implements, | 220 | $3, 452.923 | 2, 540 | . . | 77 | $898 608 | $1, 788 420 | $3, 686 212 |
| Bags, other than paper, . | 7 | 202, 000 | 54 | 117 | . . . | 43, 215 | 482 820 | 560.500 |
| Bags, paper, | 15 | 358, 600 | 123 | 277 | 6 | 107. 376 | 618. 027 | 852. 478 |
| Belting and hose, leather, | 9 | 280, 500 | 76 | . | 6 | 42 465 | 367. 571 | 476, 545 |
| Blacking, . . . . . . . . | 5 | 225, 000 | 51 | 97 | 5 | 48, 648 | 221, 061 | 485, 706 |
| Bone-ivory and lamp black | 5 | 428, 350 | 79 | 2 | 16 | 30, 700 | 214, 075 | 286, 750 |
| Book-binding and blank-book making, . . . | 74 | 890. 775 | 867 | 829 | 148 | 585 786 | 727. 166 | 1, 703. 206 |
| Boot and shoe-findings, . | 20 | 121 950 | 94 | 107 | 6 | 62, 088 | 140. 072 | 253 668 |
| Boots and shoes, . . . . | 145 | 3, 627 840 | 5, 085 | 2, 442 | 318 | 2 820, 976 | 5, 425, 844 | 9, 590, 002 |
| Boxes, segar, . . . . . . | 61 | 134. 522 | 135 | 93 | 45 | 63, 743 | 172, 916 | 332, 124 |
| Boxes, fancy and paper . | 47 | 438, 450 | 227 | 1, 228 | 56 | 281 445 | 401 378 | 894. 505 |
| Boxes, wooden, packing, | 61 | 486 270 | 502 | 28 | 75 | 220. 550 | 605 455 | 977. 725 |
| Brass castings, . . | 63 | 1, 578, 901 | 1 009 | 19 | 89 | 456. 748 | 1, 344. 931 | 2, 294, 684 |
| Brass and copper, rolled, | 2 | 600, 000 | 94 | . | 5 | 80 000 | 432, 000 | 640, 000 |
| Bread and other bakery products, . . . . . . . | 1, 265 | 3, 919, 053 | 2, 923 | 384 | 197 | 1, 315, 677 | 5, 263, 591 | 8, 448 474 |
| Brick and tile, . . . . . . | 521 | 5, 028, 524 | 7, 135 | 6 | 1, 285 | 2, 077. 168 | 1, 332, 758 | 4, 813, 153 |
| Bridges, . . . . . . . | 7 | 720. 400 | 859 | . | 13 | 425 290 | 1, 071, 936 | 1. 757, 932 |
| Bronze castings, . . | 5 | 126 250 | 50 | . | 1 | 27, 072 | 423, 170 | 545. 876 |
| Brooms and brushes, . . | 122 | 626, 215 | 725 | 88 | 252 | 292 556 | 678, 753 | 1, 293, 881 |
| Buttons, . . . . . . . . . | 18 | 159, 000 | 324 | 166 | 133 | 167, 613 | 146, 585 | 387, 554 |
| Cardboard, | 1 | 250, 000 | 63 | 106 | 37 | 50 000 | 300 000 | 450 000 |
| Carpets, other than rag, . | 172 | 7, 210, 483 | 5 731 | 2, 384 | 774 | 3, 035. 971 | 8, 992, 385 | 14, 304, 660 |
| Carpets, rag, . . | 143 | 142 542 | 322 | 22 | 36 | 102, 054 | 243, 444 | 449, 825 |
| Carriage and wagon materials, | 47 | 485, 616 | 458 | . . | 12 | 159, 453 | 325, 916 | 634, 777 |
| Carriages and wagons, . . | 391 | 3, 627, 023 | 3, 875 | 5 | 54 | 1, 584, 035 | 2, 059, 819 | 4, 760, 723 |
| Cars, railroad, street, and repairs, . . . . . . | 43 | 2 946 912 | 3, 850 | 2 | 48 | 1, 352, 299 | 6, 032, 114 | 8, 082, 272 |
| Cheese and butter, . . . . | 146 | 395, 020 | 253 | 43 | 8 | 51. 943 | 655. 368 | 915, 468 |
| Clothing, horse, . . . . . | 2 | 407. 000 | 68 | 482 | . . . | 133 800 | 443 200 | 680. 000 |
| Clothing, men's, . . . . | 876 | 10. 816. 742 | 8, 791 | 13, 328 | 91 | 5, 127 682 | 15, 332, 253 | 23, 821, 887 |
| Clothing, women's, . . | 75 | 941. 950 | 351 | 2, 878 | 99 | 618 603 | 1, 776, 610 | 2, 977, 810 |
| Coffee and spices, roasted and ground, | 32 | 885. 000 | 171 | 121 | 5 | 118, 383 | 2, 240, 980 | 2, 652, 830 |
| Coffins, burial cases, and undertakers' goods, . . | 105 | 681, 425 | 547 | 38 | 5 | 229, 036 | 425, 267 | 903, 074 |
| Coke, . . . . . . | 104 | 4 262 525 | 2, 379 | 3 | 62 | 983, 431 | 2 241 154 | 4, 190. 136 |
| Confectionery, . . . . . | 283 | 1, 718, 690 | 1, 036 | 531 | 204 | 512, 141 | 2 358. 774 | 3, 564, 934 |
| Cooperage, . . . . . . . . | 249 | 1 385 335 | 1, 845 | 2 | 174 | 671, 464 | 2, 126, 784 | 3, 256, 552 |
| Coppersmithing, . . . . | 11 | 148, 950 | 95 | 2 | 1 | 51, 654 | 148. 849 | 255, 423 |
| Cordage and twine, . . . | 23 | 1, 289, 250 | 395 | 240 | 247 | 274. 282 | 1, 437, 026 | 2, 039. 721 |
| Cork-cutting, . . . . . . . | 11 | 479. 550 | 141 | 146 | 65 | 97. 764 | 473. 260 | 708 500 |
| Cotton goods, . . . . . . . | 189 | 15, 490. 735 | 5, 990 | 8, 232 | 3, 341 | 4, 683 617 | 12, 500, 217 | 21, 640. 397 |
| Crucibles, . . . . . . . . . | 7 | 440, 250 | 92 | . . . | . . . | 57, 560 | 434, 271 | 577, 189 |
| Cutlery and edge tools, . | 61 | 2, 585 610 | 2 024 | 46 | 106 | 882, 612 | 1, 148, 138 | 2, 614, 239 |
| Dentists' materials, . | 4 | 715 000 | 255 | 60 | 11 | 156, 175 | 159, 000 | 564. 000 |
| Drugs and chemicals, | 75 | 11, 680, 812 | 2, 362 | 340 | 76 | 1, 300, 238 | 8, 245, 297 | 13, 092, 863 |
| Dyeing and finishing textiles, . . . . . | 60 | 3, 884 846 | 1, 926 | 248 | 424 | 1, 041 309 | 2. 398. 396 | 6, 259, 852 |
| Dyestuffs and extracts, . | 6 | 432, 000 | 107 | | . . | 50, 185 | 269, 090 | 452, 979 |
| Fancy articles, . . . . . . | 19 | 154 700 | 129 | 39 | 14 | 76, 305 | 130 012 | 255, 406 |
| Felt goods, . . . . . . | 1 | 150, 000 | 167 | 75 | 20 | 80, 000 | 250 000 | 450 000 |
| Fertilizers, . . . . . . . . | 45 | 831, 515 | 373 | . | 3 | 137. 955 | 981. 987 | 1. 433, 245 |
| Files, . . . . | 26 | 488, 500 | 508 | 19 | 80 | 223, 593 | 216, 545 | 580, 443 |
| Flouring and grist-mill products, . . . . . . . . | 2, 873 | 20, 238, 601 | 4, 422 | 1 | 11 | 1, 105, 939 | 36, 291 933 | 41, 522, 662 |

## TABLE B—*Continued.*

| MECHANICAL AND MANUFACTURING INDUSTRIES. | Number of establishments. | Capital. | AVERAGE NO. OF HANDS EMPLOYED. | | | Total amount paid in wages during the year. | Materials. | Products. |
|---|---|---|---|---|---|---|---|---|
| | | | Males above 16 years. | Females above 15 years. | Children and youths. | | | |
| Food preparations, . . | 10 | $376,500 | 100 | 83 | 10 | $61,127 | $226 722 | $371,003 |
| Foundry and machine shop products, | 748 | 28,982,140 | 22 907 | 79 | 898 | 10,293,821 | 17,636.353 | 35,029,673 |
| Fruits and vegetables, canned and preserved. . | 14 | 267,925 | 91 | 171 | 39 | 67,202 | 469 326 | 606 000 |
| Furnishing goods, men's, | 22 | 124.740 | 61 | 336. | 36 | 88,260 | 318,736 | 501 007 |
| Furniture, . . . . . . . . | 718 | 5,445,940 | 4,928 | 92 | 179 | 2 090,088 | 3,725,989 | 7,588,229 |
| Furniture, chairs, . . . . | 45 | 111 700 | 273 | 14 | 47 | 143.037 | 186 071 | 437,010 |
| Furs, dressed, . . . . | 16 | 238,000 | 50 | 153 | 5 | 59,233 | 292.800 | 496,700 |
| Galvanizing, . | 7 | 370,000 | 241 | . . | 5 | 112.132 | 720.295 | 976.875 |
| Gas and lamp-fixtures, . | 5 | 251.500 | 283 | 43 | 11 | 133,759 | 93,085 | 355.228 |
| Gas-machines and meters, | 11 | 471,500 | 361 | 7 | 15 | 154,103 | 227,498 | 475,804 |
| Glass, . . . . . . . . . . . | 78 | 7,639.706 | 6,999 | 294 | 2,491 | 3,897,306 | 3,350.660 | 8 720,584 |
| Glue, . . | 13 | 1 810 400 | 498 | 90 | 51 | 184.950 | 1.376.821 | 1,903 470 |
| Gold and silver leaf and foil | 8 | 237,000 | 157 | 157 | 10 | 135,300 | 344 150 | 525,344 |
| Gold and silver, reduced and refined, . . . . . | 2 | 20 500 | 13 | . . | 4 | 9,130 | 200,800 | 251,560 |
| Grease and tallow, . . . . | 27 | 322 075 | 110 | . | 1 | 56,223 | 1,416,614 | 1,671,265 |
| Gunpowder, . . . . . . . . | 11 | 858,900 | 157 | 8 | 3 | 73 871 | 420,834 | 693,854 |
| Hardware, . . . . . . . | 68 | 1,980.729 | 2,184 | 41 | 359 | 893.032 | 1.761.884 | 3.[illegible]25 526 |
| Hats and caps, . . . . . . | 70 | 820,553 | 1,255 | 561 | 52 | 711.159 | 1,082.079 | 2 342 324 |
| High explosives, . . | 11 | 76 025 | 78 | | | 39.837 | 190 783 | 309.220 |
| Hosiery and knit goods, . | 106 | 3,743,790 | 2,337 | 5 570 | 1,365 | 2,175,913 | 4,924,138 | 8,935 147 |
| Ink, . | 12 | 398,800 | 81 | 8 | 11 | 62,608 | 169 375 | 362,550 |
| Instruments, professional and scientific, . . | 26 | 347,086 | 224 | 7 | 14 | 137,798 | 87 307 | 349,126 |
| Iron and steel, | 366 | 107.304,782 | 54,637 | 12 | 3,303 | 25.095,850 | 92,267,030 | 145.576,268 |
| Iron bolts, nuts, washers, and rivets, . . . . . . . | 17 | 1.444.500 | 1,306 | 60 | 278 | 521,625 | 1,571,456 | 2,636.366 |
| Iron forgings, . . . . . . . | 19 | 558,500 | 594 | . . . | 38 | 264 743 | 667,125 | 1,110,166 |
| Iron nails and spikes, cut and wrought, . | 9 | 192,450 | 83 | 14 | 7 | 37.849 | 206,410 | 291.927 |
| Iron pipe, wrought, . . . | 12 | 3 864,565 | 3,151 | 1 | 183 | 996 567 | 6,141.797 | 8,418 975 |
| Ivory and bone work, . | 11 | 209 750 | 253 | 29 | 64 | 112.888 | 152.599 | 358,019 |
| Jewelry, . . . . . . | 33 | 485,256 | 394 | 24 | 32 | 220,902 | 437,416 | 846 736 |
| Lard, refined, . . . . . . | 2 | 350,000 | 65 | 6 | . . . . | 29,631 | 1,135,000 | 1,221,000 |
| Lead, bar, pipe, sheet, and shot, . . . . | 4 | 665,000 | 89 | . . | 2 | 49.076 | 820,500 | 1,008,000 |
| Leather, curried, . | 455 | 2.570 969 | 827 | 4 | 15 | 334.950 | 6 639.432 | 7.852.177 |
| Leather, dressed skins, . | 56 | 2 589.347 | 2,071 | 103 | 89 | 1,158 898 | 4.896,982 | 6 745.044 |
| Leather, tanned, . . . . | 642 | 15,608,635 | 5,541 | 12 | 39 | 1.967.946 | 19,716,236 | 27,042.068 |
| Lightning-rods, . . . . | 3 | 255,000 | 58 | . | . . . | 25,475 | 358,500 | 481,000 |
| Lime, . . . | 120 | 471 610 | 579 | . . | 10 | 141 887 | 174 979 | 466,532 |
| Liquors, distilled, . . . . | 70 | 2 198 753 | 334 | . | . . | 138 745 | 1,216,120 | 1,856,484 |
| Liquors, malt, . . . . | 291 | 12,073,068 | 2,439 | . . | 13 | 1,200 289 | 5,765.837 | 10,124 348 |
| Lithographing, . | 24 | 659,550 | 483 | 65 | 59 | 269,011 | 259,627 | 765,003 |
| Looking-glass and picture frames, . . . . . . | 74 | 799,793 | 696 | 19 | 75 | 330 660 | 610,641 | 1,276,471 |
| Lumber, planed, . . . | 200 | 3.250,225 | 2 142 | 6 | 61 | 758 281 | 2 749,840 | 4 602 753 |
| Lumber, sawed, . . . . | 2,827 | 21 418,588 | 14.443 | 8 | 463 | 2,918.459 | 13,955 430 | 22.457,359 |
| Malt, . | 26 | 2 522,000 | 309 | 1 | . | 108,892 | 1,794,761 | 2,333,348 |
| Mantles, slate, marble, and marbleized, | 15 | 145,800 | 171 | . | 4 | 77 792 | 127,513 | 263 106 |
| Marble and stone work, . | 321 | 2.476,752 | 2,185 | 1 | 11 | 970,026 | 1,467,475 | 3,135,651 |
| Matches, . . . . . | 5 | 237,800 | 39 | 66 | 11 | 29,931 | 166,592 | 311,500 |
| Matttresses and spring beds, | 27 | 123,850 | 119 | 46 | 15 | 51,263 | 272,990 | 362,599 |
| Millinery and lace goods, | 40 | 593,300 | 85 | 1,139 | 54 | 205.942 | 1,063 779 | 1,518,578 |
| Mineral and soda waters, | 33 | 192,800 | 206 | | 22 | 83,044 | 181,095 | 340.433 |
| Mixed textiles, . . . . . | 126 | 11,536,818 | 5,361 | 6,971 | 1,936 | 4,223,662 | 12,202,028 | 20,882,764 |

## TABLE B—*Continued.*

| MECHANICAL AND MANUFACTURING INDUSTRIES. | Number of establishments. | Capital. | AVERAGE NO OF HANDS EMPLOYED. | | | Total amount paid in wages during the year. | Materials. | Products. |
|---|---|---|---|---|---|---|---|---|
| | | | Males above 16 years. | Females above 15 years. | Children and youths. | | | |
| Oilcloth, floor, | 2 | $938 550 | 374 | 2 | 10 | $169.084 | $646.785 | $1,219.571 |
| Oil, linseed. | 9 | 409 200 | 59 | 5 | ... | 29.846 | 596,500 | 697.205 |
| Oil, lubricating, | 9 | 85.500 | 82 | 2 | ... | 41,593 | 508 411 | 642 370 |
| Oleomargarine, | 1 | 100,000 | 45 | 16 | 3 | 26.000 | 192 946 | 298 386 |
| Paints, | 46 | 3,128 192 | 791 | 26 | 7 | 394,437 | 2,657,857 | 3,674,043 |
| Paper-hangings, | 4 | 820,000 | 263 | 1 | 137 | 161.120 | 384.252 | 708.979 |
| Paper, not specified. | 78 | 4,099,000 | 1,481 | 555 | 47 | 752,151 | 3,185,168 | 5,355,912 |
| Patent medicines and compounds, | 53 | 2,076 100 | 259 | 189 | 7 | 194,524 | 734 262 | 2,006,058 |
| Pickles, preserves, and sauces. | 7 | 84 248 | 55 | 15 | 1 | 25 173 | 167,096 | 268.812 |
| Pocket-books, | 5 | 250,000 | 271 | 209 | 48 | 120,000 | 219,500 | 412,000 |
| Printing and publishing, | 371 | 8,962,320 | 5,897 | 625 | 1,180 | 3,274 969 | 4,157,045 | 10,229,893 |
| Roofing and roofing material, | 116 | 451 055 | 513 | 3 | 6 | 219.958 | 394.442 | 798 999 |
| Saddlery and harness, | 781 | 1,301 402 | 1,542 | 54 | 35 | 540,772 | 1,265,482 | 2,505,850 |
| Safes, doors, and vaults, fireproof, | 7 | 176,000 | 159 | ... | 1 | 93,850 | 106,015 | 259.505 |
| Sash, doors, and blinds, | 109 | 1,989,198 | 1,601 | 1 | 45 | 627,674 | 1,480,004 | 2,513,607 |
| Saws, | 7 | 1,518,000 | 1,115 | 6 | 134 | 620,140 | 634,897 | 1,654,200 |
| Sewing machines and attachments, | 7 | 1.175.800 | 440 | 8 | 51 | 226 000 | 225.190 | 625.550 |
| Shipbuilding, | 125 | 5 797.731 | 3,298 | | ... | 2.279.629 | 3 610.367 | 6,689.470 |
| Shirts, | 61 | 785 094 | 242 | 2,597 | 85 | 614,924 | 1,182.154 | 2,095 761 |
| Shoddy, | 11 | 186,000 | 90 | 40 | 13 | 47,441 | 510,977 | 655,895 |
| Silk and silk goods, | 49 | 1,379,900 | 1,000 | 1,870 | 319 | 678,120 | 1,830,985 | 3,491,840 |
| Slaughtering and meat packing, | 35 | 2,938 625 | 531 | . | 21 | 242,077 | 8,854,778 | 9 908,545 |
| Soap and candles, | 78 | 1,873 971 | 490 | 62 | 35 | 331,677 | 1,809,904 | 2,715,771 |
| Springs, steel, car and carriage, | 12 | 600.100 | 361 | . . | 28 | 180,613 | 768,059 | 1,138.895 |
| Stationery goods, | 26 | 203 500 | 324 | 34 | 61 | 111,310 | 338,920 | 556,473 |
| Steam fittings and heating apparatus, | 14 | 251,300 | 259 | . . | 11 | 112.980 | 255,833 | 506,962 |
| Stone and earthenware, | 97 | 670,545 | 634 | 85 | 93 | 254,082 | 202,011 | 655,169 |
| Sugar and molasses refined, | 11 | 6,072,000 | 1,073 | ... | 5 | 474 017 | 21,943.943 | 24,294,929 |
| Tinware, copperware, and sheet-ironware, | 1,010 | 3,223 836 | 3,093 | 128 | 185 | 1,325,010 | 2 735,514 | 5,442,555 |
| Tobacco, chewing, smoking, and snuff, | 11 | 398,676 | 136 | 122 | 16 | 71,084 | 572,456 | 910,204 |
| Tobacco, cigars, and cigarettes, | 1,377 | 2 934,819 | 5,064 | 1,329 | 564 | 1,885.530 | 3,144,977 | 6.906.603 |
| Tools, | 22 | 1,657 182 | 752 | . . | . . | 339,656 | 291.452 | 883.973 |
| Toys and games, | 14 | 172,100 | 270 | 102 | 175 | 107,328 | 96 425 | 306 086 |
| Trunks and valises, | 24 | 114 900 | 148 | . . | 3 | 66 835 | 175,172 | 306,742 |
| Type founding, | 4 | 810.000 | 279 | 2 | 25 | 146,694 | 89,400 | 417,132 |
| Umbrellas and canes, | 33 | 1 379.050 | 621 | 999 | 166 | 481,347 | 1,788.464 | 2,822,244 |
| Upholstering, | 107 | 266,900 | 294 | 103 | 20 | 163.366 | 397.258 | 784 020 |
| Varnish, | 11 | 241,800 | 69 | . | 7 | 34,865 | 201,275 | 372,310 |
| Watch cases, | 11 | 553,175 | 433 | 54 | 12 | 243,722 | 534,480 | 1,013.180 |
| Wire, | 5 | 560,500 | 106 | 13 | . | 58,108 | 269,338 | 378,658 |
| Wirework, | 35 | 246 650 | 302 | 1 | 55 | 119,090 | 500,241 | 763.832 |
| Wooden ware, | 22 | 358.500 | 268 | .... | 65 | 126,750 | 178,448 | 387,302 |
| Wood pulp, | 2 | 510.000 | 205 | | . . | 97,000 | 206 006 | 463,195 |
| Wood, turned and carved, | 55 | 324 650 | 449 | 18 | 63 | 173.524 | 199,797 | 496,100 |
| Woolen goods, | 324 | 18.780,604 | 8,391 | 6,809 | 2,489 | 5,254,328 | 21,185,804 | 32,341,291 |
| Wool hats, | 23 | 797 500 | 726 | 290 | 133 | 317,987 | 1.034,652 | 1 717,826 |
| Worsted goods, | 28 | 4.959,639 | 1,673 | 2,378 | 949 | 1 473,958 | 7,277.489 | 10,072 473 |
| Zinc, | 2 | 1 065,000 | 184 | | 8 | 81,020 | 238 859 | 377 280 |
| All other industries, | 9,373 | 18,565,106 | 23 921 | 2,716 | 1,218 | 9,743,161 | 16,321,145 | 35,789,773 |

# OCCUPATIONS.

[From Compendium of Tenth Census.]

The following list shows the total number of persons reported in the census of 1880 as pursuing gainful avocations, their division into certain classes as to age and sex, and also their distribution among the four great classes of occupations, viz: "Agriculture," "professional and personal services," "trade and transportation," and "manufactures," including the mechanical and mining industries:

| Classes. | Persons occupied. | Age and Sex. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | All ages. | | 10 to 15. | | 16 to 59. | | 60 and over. | |
| | | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. |
| All occupations, | 17,392,099 | 14,744,942 | 2,647,157 | 825 187 | 293 169 | 12 986,111 | 2 283 115 | 933,644 | 70,873 |
| Agriculture, | 7,670,493 | 7,075,983 | 594,510 | 584 867 | 135 862 | 5.888,133 | 435,920 | 602,983 | 22,728 |
| Professional and personal services, | 4,074,238 | 2.712 943 | 1,361,295 | 127,565 | 107 830 | 2,446,962 | 1,215,189 | 138,416 | 38,276 |
| Trade and transportation, | 1,810,256 | 1,750,892 | 59,364 | 26,078 | 2 547 | 1 672,171 | 54,849 | 52,643 | 1,968 |
| Manufacturing, mechanical, and mining, | 3,837,112 | 3,205,124 | 631,988 | 86 677 | 46,930 | 2,978 845 | 577,157 | 139,602 | 7,901 |

It appears from the foregoing table that the aggregate number of persons returned as having gainful avocations was 17,392,099, being 34.68 per cent. of the entire population of 1880, and 47.31 per cent. of the population ten years of age and upward.

In 1870 the total number of persons borne on the lists of occupations was 12,505,923, being 32.43 per cent. of the population of that date, and 44.3 per cent. of the population ten years of age and upward.

It thus appears that the tables of occupations in the present volume embrace a larger share of the total population than those contained in the publications of the last census.

The number of persons ten years of age and upward was, in 1870, 28,228,945; in 1880, 36,761,607; an increase of 30.23 per cent. Applying this ratio of increase to the reported occupations of 1870, and by turns to the number in each of the four great classes, we should have results as follows, against which we have set the actual numbers returned in 1880:

| CLASSES. | Occupations, 1870. | Increased by 3) 23 per cent. | Actual number returned in 1880. | Excess. | Deficiency. |
|---|---|---|---|---|---|
| All occupations, | 12,505,923 | 16 286,463 | 17,392,099 | 1,105,636 | . . |
| Agriculture, | 5,922,471 | 7,712,834 | 7.670 493 | . | 42,341 |
| Professional and personal services, | 2.684,793 | 3.496,406 | 4.074 238 | 577.832 | |
| Trade and transportation, | 1,191,238 | 1,551,349 | 1,310 256 | 258,907 | . . |
| Manufacturing, mechanical, & mining industries, | 2 707,421 | 3,525,874 | 3 837,112 | 311,238 | . . . . |

We see, thus, that if we compare the number of occupations returned in 1870, increased by the rate of increase which took place during the decade in the population over ten years of age, with the number of occupations actually returned in 1880, we find a deficiency in the agricultural class to the extent of 42,341; an excess in the class rendering professional and personal services of 577,832; in that engaged in trade and transportation of 258,907; and in that engaged in manufactures, or mechanical and mining industries, of 311,238; making a net excess, in all classes of occupations, of 1,105,636.

There is reason to believe that the deficiency in the agricultural class, and the marked increase in the class rendering professional and personal services, is due, in some measure, to the reporting of persons as "laborers," simply, who should have been returned as "agricultural laborers." In some parts of the country, where agriculture is, in a high degree, predominant, there is, doubtless, a certain tendency to drop the qualifying adjective, and speak of "laborers" simply. Wherever it has been within the power of the Census Office to apply a correction to this error, it has been done, yet there probably remains a certain amount of fallacious classification, resulting from the failure of enumerators duly to characterize this class of persons.

It is also probable that the class of "laborers" embraces considerable numbers of persons who are employed in connection with manufacturing establishments with sufficient regularity to justify their inclusion in the manufacturing class, were the facts known.

If we ask how the relative excess of occupations in 1880 over 1870 is distributed, according to sex, we shall find that of the total excess, viz: 1,105,636, as stated, nearly one quarter is of females—the number of females reported as pursuing gainful occupations having increased from 1870 to 1880 in a higher ratio than the number of males. Thus:

| | |
|---|---|
| Number of females in gainful occupations in 1870, | 1,826,288 |
| Increased by the ratio of increase in the female population since 1870, viz: 29.03 per cent., | 2,369,362 |
| Actual number returned in 1880, | 2,647,157 |
| Relative excess, | 277,795 |

Of this excess, about two thirds appears in the last of the four classes indicated, showing the effect upon the employment of women produced by the extension of the factory system.

If we inquire how the same excess is distributed according to age, we shall find that a disproportionate share falls in the class between ten and fifteen years of age, showing a further effect of the extension of the factory system in the increased employment of young children. Thus:

| | |
|---|---|
| Number of persons, of both sexes, between ten and fifteen years of age, reported in 1870 as in gainful occupations, . . . . | 739,164 |
| Increased by 18.65 per cent., the ratio of increase in the population of this age from 1870 to 1880, . . . . . . . . . . . . . . . . | 877,018 |
| Actual number reported, . . . . . . . . . . . . . . . . . . . . . | 1,118,356 |
| Relative excess, . . . . . . . . . . . . . . . . . . . . . . . | 241,338 |

Although the tables of occupations, as we have seen, embrace a larger share of the population than in 1870, they still omit, as was to be expected, more than half the population of ten years of age and upward.

The following table makes comparison between the number of inhabitants of either sex in each of the periods of life, taken for the purposes of these tables, and the corresponding number of persons returned as pursuing gainful occupations:

| | AGGREGATE. | TOTAL 10 YEARS AND UPWARD. | |
|---|---|---|---|
| | | Male. | Female. |
| Population, (10 years of age and upward,) . | 36,761,607 | 18,735,980 | 18,025 627 |
| Number on occupation tables, . . . . . . . | 17,392,099 | 14 744,942 | 2,647,157 |
| | 19,369,508 | 3,991,038 | 15,378,470 |

| | 10 TO 15. | | 16 TO 59. | | 60 AND OVER. | |
|---|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | Male. | Female. |
| Population, (10 years of age & upward,) | 3,376,114 | 3,273,369 | 13,907,444 | 13,377,002 | 1,452,422 | 1,375,256 |
| Number on occupation tables, . . . . | 825,187 | 293,169 | 12,986,111 | 2,283,115 | 933,644 | 70,873 |
| | 2,550,927 | 2,980,200 | 921,333 | 11,093,887 | 518,778 | 1,304,383 |

It will be seen that the total number of males ten years and upward unaccounted for in these tables is 3,991,038; of females, 15,378,470.

The number of persons of the two sexes between ten and fifteen years thus unaccounted for, viz: 2,550,927 males and 2,980,200 females, is substantially equal to the number of children attending school who do not, through any considerable portion of the year, pursue any gainful avocation. There is, of course, a residue consisting of invalid children, of vagrants, of inmates of institutions of charity or correction, etc.

Between sixteen and fifty-nine the number of males unaccounted for is 921,333. This number is made up chiefly of the following classes: *First.* Those students who are pursuing courses of instruction beyond the age of sixteen. *Secondly.* Those who are afflicted by permanent bodily or mental infirmities, disqualifying them from participating in the industry of the country. *Third.* The members of the criminal and pauper classes. The number of men of this period of life, not disabled, who are not returned as of some occupation by reason of inherited wealth or of having retired from business is hardly important enough in this country to be mentioned. The number of females between sixteen and fifty-nine not accounted for in these tables is naturally vastly larger, and amounts to 11,093,887. That body is made up of the three classes just mentioned when speaking of the males of this period of life, and of the far greater classes of women—wives, mothers, or grown daughters, keeping house for their families or living at home without any special avocation.

The explanation of the number of persons sixty years of age and upward returned without occupation is so manifest as not to require to be even alluded to. Of these there are: Of males, 518,778; of females, 1,304,383.

These tables embrace only gainful and reputable occupations. They do not seek to account for those persons, in whatever sphere of life, who have no recognized avocation for which they receive compensation in the shape of wages, salary, or profits, or derive products of a merchantable character. All persons, moreover, whose means of livelihood are criminal, or, in the general judgment of mankind, shameful, are excluded.

**COMPARATIVE INCREASE** *in occupations and in population, 1870 to 1880.*

| STATES AND TERRITORIES. | ALL OCCUPATIONS. | | | Per cent. of increase in population. |
|---|---|---|---|---|
| | 1880. | 1870. | Per ct. of increase. | |
| The United States, | 17,392 099 | 12,505,923 | 39 | 30 |
| Alabama, | 492 790 | 365,258 | 35 | 27 |
| Arizona, | 22,271 | 6 030 | 269 | 319 |
| Arkansas, | 260 692 | 135.949 | 92 | 66 |
| California, | 376 505 | 238.648 | 58 | 54 |
| Colorado, | 101,251 | 17,583 | 476 | 387 |
| Connecticut, | 241 333 | 193,421 | 25 | 16 |
| Dakota, | 57.844 | 5 887 | 883 | 853 |
| Delaware, | 54 580 | 40,313 | 35 | 17 |
| District of Columbia, | 66 624 | 49.041 | 36 | 35 |
| Florida, | 91,536 | 60,703 | 51 | 44 |
| Georgia, | 597.862 | 444 678 | 34 | 30 |
| Idaho, | 15.578 | 10.879 | 43 | 117 |
| Illinois, | 999,780 | 742 015 | 35 | 21 |
| Indiana, | 635,080 | 459.369 | 38 | 18 |
| Iowa, | 528,302 | 344,276 | 53 | 36 |
| Kansas, | 322,285 | 123 852 | 160 | 173 |
| Kentucky, | 519.854 | 414,593 | 25 | 25 |
| Louisiana, | 363 228 | 256,452 | 42 | 29 |
| Maine, | 231,993 | 208,225 | 11 | 4 |
| Maryland, | 324,432 | 258,543 | 25 | 20 |
| Massachusetts, | 720,774 | 579 844 | 24 | 22 |
| Michigan, | 569,204 | 404 164 | 41 | 38 |
| Minnesota, | 255 125 | 132,657 | 92 | 78 |
| Mississippi, | 415.506 | 318.850 | 30 | 37 |
| Missouri, | 692,959 | 505,556 | 37 | 26 |
| Montana, | 22 255 | 14.048 | 58 | 90 |
| Nebraska, | 152.614 | 43.837 | 248 | 268 |
| Nevada, | 32,233 | 26,911 | 20 | 47 |
| New Hampshire, | 142.468 | 120 168 | 19 | 9 |
| New Jersey, | 396,879 | 296,036 | 34 | 25 |
| New Mexico, | 40.822 | 29.361 | 39 | 30 |
| New York, | 1,884 645 | 1,491,018 | 26 | 16 |
| North Carolina, | 480.187 | 351 299 | 37 | 31 |
| Ohio, | 994.475 | 840,889 | 18 | 20 |
| Oregon, | 67,343 | 30,651 | 120 | 92 |
| Pennsylvania, | 1,456.067 | 1,020,544 | 43 | 22 |
| Rhode Island, | 116 979 | 88,574 | 32 | 27 |
| South Carolina, | 392 102 | 263 301 | 49 | 41 |
| Tennessee, | 447,970 | 367 987 | 22 | 23 |
| Texas, | 522,133 | 237 126 | 120 | 94 |
| Utah, | 40.055 | 21,517 | 86 | 66 |
| Vermont, | 118 584 | 108,763 | 9 | 1 |
| Virginia, | 494,240 | 412 665 | 20 | 23 |
| Washington, | 30,122 | 9 760 | 209 | 214 |
| West Virginia, | 176,199 | 115 229 | 53 | 40 |
| Wisconsin, | 417,455 | 292 808 | 43 | 25 |
| Wyoming, | 8,884 | 6,645 | 34 | 128 |

Several things are well worthy of note in the foregoing table:

*First.* That in certain States and Territories the ratio of increase in population is greater, in some cases much greater, than the ratio of increase in gainful occupations reported. This is due to the fact that these communities are losing something of the frontier character and taking on more of the social and domestic character of older communities. Thus we have Arizona gaining 319 per cent. in population and only 269 per cent. in reported occupations; Idaho, 117 against 43; Kansas, 173 against 160; Montana, 90 against 58; Nebraska, 268 against 248; Nevada, 47 against 20; Washington, 214 against 209; Wyoming, 128 against 34. In a word, these figures indicate the growth of homes, with women and children, in the place of the lumbering camp or the ranch, occupied by men only, all of whom were workers.

*Second.* In another group of States and Territories, where we must suppose that the same force which has produced the above-noted effects is in operation, the rapid incoming of immigrants during the decade, predominately males of adult years, has overpowered this force, and caused an increase in the proportion of bread-winners greater than the increase in population. Such are Arkansas, Colorado, Dakota, Iowa, Minnesota, New Mexico, Oregon, Texas, and Utah.

*Third.* Throughout the country generally we have an increase of occupations reported greater than the increase of population. In part, this is probably due to the closer enumeration conducted under the provisions of the act of March 3, 1879, which, by making the districts smaller, secured, in a much higher degree than had previously been attained, that house-to-house canvass which is essential to a correct census, especially as regards the details of enumeration.

In a still higher degree, probably, the increase of reported occupations is due to the growth of the factory system, to the minuter organization of industry, and to the resulting differentiation of occupations, allowing women and children to find a place where they can be useful, and earn a livelihood, both in trade and in manufactures, more readily than was the case ten years ago.

We group, as follows, the States and Territories, in their inverse rank, according to the proportion of the total population found in gainful occupations:

| | Percentage of occupations to total population. |
|---|---|
| Utah, West Virginia, | 28 |
| Tennessee, | 29 |
| Ohio, | 31 |
| Arkansas, Illinois, Indiana, Kansas, Kentucky, Missouri, Wisconsin, | 32 |
| Iowa, Minnesota, Texas, Virginia, | 33 |
| Florida, Nebraska, New Mexico, North Carolina, Pennsylvania, | 34 |
| Maryland, Michigan, New Jersey, | 35 |

| | Percentage of occupations to total population. |
|---|---|
| Maine, Vermont, | 36 |
| Delaware, Mississippi, New York, | 37 |
| District of Columbia, | 38 |
| Alabama, Connecticut, Georgia, Louisiana, Oregon, South Carolina, | 39 |
| Massachusetts, Washington Territory, | 40 |
| New Hampshire, | 41 |
| Rhode Island, | 42 |
| Dakota, Wyoming, | 43 |
| California, | 44 |
| Idaho, | 48 |
| Colorado, Nevada, | 52 |
| Arizona, | 55 |
| Montana, | 57 |

We note here, first, that in the great, prosperous, grain-raising States there is a tendency to keep down the proportion of bread-winners, (see the States having less than thirty-three per cent.;) second, that the tendency in the cotton-raising States is to a higher percentage of bread-winners, women and children going more largely into the fields; third, that the manufacturing States have also a high percentage, owing to the employment of these classes in shops and factories; and fourth, that the bread-winners reach their largest proportion in the mining and grazing States and Territories, owing both to the character of the industries there pursued, and also to the small number, relatively, of women and children in those regions.

The following table exhibits the total number of occupations reported in each of the principal fifty cities of the United States, and the proportion existing between that number and the total number of inhabitants of both sexes and all ages:

| CITY. | Population. | Total in occupation tables. | Percentage. | CITY. | Population. | Total in occupation tables. | Percentage. |
|---|---|---|---|---|---|---|---|
| Albany, N. Y., | 90,758 | 32,153 | 35 | Lynn, Mass., | 38.274 | 16,728 | 44 |
| Allegheny, Pa., | 78,682 | 25 958 | 33 | Milwaukee, Wis., | 115,587 | 40,900 | 35 |
| Atlanta, Ga., | 37,409 | 17,078 | 46 | Minneapolis, Minn., | 46,887 | 21,302 | 45 |
| Baltimore, Md., | 332 313 | 130,364 | 39 | Nashville, Tenn., | 43,350 | 16.738 | 39 |
| Boston, Mass., | 362,839 | 149,194 | 41 | Newark, N. J., | 136,508 | 49,066 | 36 |
| Brooklyn, N. Y., | 566.663 | 209,065 | 37 | New Haven, Conn., | 62,882 | 24,155 | 38 |
| Buffalo, N. Y., | 155,134 | 54,647 | 35 | New Orleans, La., | 216,090 | 78,336 | 36 |
| Cambridge, Mass., | 52,669 | 20,021 | 38 | New York, N. Y., | 1,206,229 | 513,377 | 43 |
| Camden, N. J., | 41,659 | 15,085 | 36 | Paterson, N. J., | 51,031 | 22,570 | 44 |
| Charleston, S. C., | 49,984 | 20,325 | 41 | Philadelphia, Pa., | 847,170 | 348.900 | 41 |
| Chicago, Ill., | 503,185 | 191,760 | 38 | Pittsburgh, Pa., | 156.389 | 52,173 | 33 |
| Cincinnati, Ohio, | 255,139 | 100,454 | 39 | Providence, R. I., | 104,857 | 43,878 | 42 |
| Cleveland, Ohio, | 160,146 | 56.919 | 36 | Reading, Pa., | 43,278 | 15,623 | 36 |
| Columbus, Ohio, | 51,647 | 18,737 | 36 | Richmond, Va., | 63,600 | 24,550 | 39 |
| Dayton, Ohio, | 38,678 | 14,184 | 37 | Rochester, N. Y., | 89,366 | 34,276 | 38 |
| Denver, Colo., | 35,629 | 15,737 | 44 | Saint Louis, Mo., | 350,518 | 139,985 | 40 |
| Detroit, Mich., | 116,340 | 39,245 | 34 | Saint Paul, Minn., | 41,473 | 17,809 | 43 |
| Fall River, Mass., | 48,961 | 22,685 | 46 | San Francisco, Cal., | 233,959 | 104 650 | 45 |
| Hartford, Conn., | 42,015 | 17,212 | 41 | Scranton, Pa., | 45,850 | 16,829 | 37 |
| Indianapolis, Ind., | 75,056 | 27,966 | 37 | Syracuse, N. Y., | 51,792 | 20,409 | 39 |
| Jersey City, N. J., | 120,722 | 42 356 | 35 | Toledo, Ohio, | 50,137 | 17,691 | 35 |
| Kansas City, Mo., | 55,785 | 25,081 | 45 | Troy, N. Y., | 56,747 | 23,745 | 42 |
| Lawrence, Mass., | 39,151 | 19,153 | 49 | Washington, D. C., | 147,293 | 57,262 | 39 |
| Louisville, Ky., | 123,758 | 45,244 | 37 | Wilmington, Del., | 42,478 | 19,281 | 45 |
| Lowell, Mass., | 59,475 | 29,781 | 50 | Worcester, Mass., | 58,291 | 22,535 | 39 |

It will be observed that the proportion between the number of persons pursuing gainful occupations and the total population enumerated, varies in the several cities in the foregoing list from 33 per cent. as a minimum to 50 per cent. as a maximum, *i. e.*, from one third to one half—a much narrower range than we noted in the case of the States.

We group the cities below in their rank in the respect indicated :

| | Percentage. |
|---|---|
| Allegheny, Pittsburgh, | 33 |
| Detroit, | 34 |
| Albany, Buffalo, Jersey City, Milwaukee, Toledo, | 35 |
| Camden, Cleveland, Columbus, Newark, New Orleans, Reading, | 36 |
| Brooklyn, Dayton, Indianapolis, Louisville, Scranton, | 37 |
| Cambridge, Chicago, New Haven, Rochester, | 38 |
| Baltimore, Cincinnati, Nashville, Richmond, Syracuse, Washington, Worcester, | 39 |
| Saint Louis, | 40 |
| Boston, Charleston, Hartford, Philadelphia, | 41 |
| Providence, Troy, | 42 |
| New York, Saint Paul, | 43 |
| Denver, Lynn, Paterson, | 44 |
| Kansas City, Minneapolis, San Francisco, Wilmington, | 45 |
| Atlanta, Fall River, | 46 |
| Lawrence, | 49 |
| Lowell, | 50 |

The facts which explain these wide variations in the proportions between the number of persons pursuing gainful occupations and the total population of a city are many. The most important may be grouped under three heads: *First.* The deviations of the respective populations of these cities to the one side or to the other from the type of a normal population, considered as to age and sex.* *Secondly.* The character of the prevailing occupations of the several cities, as determining the question whether women and children shall be largely employed or not. *Thirdly.* Social causes, affecting the employment of women in avocations of a certain class, or affecting the employment of children under a certain age.

The variation of the population of a city either way from the type may affect the proportion of the inhabitants who shall be employed in gainful occupations, either to diminish or to increase it, according to circumstances. Thus, going to a far western city like Kansas City, Minneapolis, or Denver, we shall find the population composed more largely of males than of females, and containing a larger proportion of adults of the working age than is found in a normal population. This is due to the fact that great numbers of the inhabitants of any one of these cities have recently gone thither to seek their fortunes, leaving the women, the children, and the aged behind in the older communities from which they came. Here a high percentage of actual bread-winners is naturally expected. On the other hand, turning to Lowell, Lawrence, and Fall River, where females and children are largely in excess, we find an even higher percentage of bread-winners. This seems like a contradiction. The explanation is found in the factory industries of these cities, which provide employment for enormous numbers of women, who, in a western city, would be living at home keeping the house, and of children who, under the same conditions, would be attending school or living at home without gainful occupation.

The influence of the prevailing industries of a city upon the proportion of bread-winners is too familiar to require to be illustrated. The two great iron-making cities of Allegheny and Pittsburgh keep only a bare third of their population at work, because the labor of women and children would be of little account. Cleveland, another great iron-making city, has but 36 per cent. of its population engaged in gainful occupations; but a great center of the textile industries, like Paterson, Fall River, Lawrence, or Lowell, keeps nearly or quite one half of its men, women, and children at work. Philadelphia, which is both a great weaving city and a center of heavy manufactures, especially of iron, stands in a mean between the two, having 42 per cent. of its population engaged in gainful occupations.

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* It may be said that this deviation is due to the cause next to be mentioned, viz: The prevailing occupations of the city, and in part this would be true, and in part not. It would be much less true of a city than of a State. Thus, we might suppose the industries of St. Paul or Minneapolis to remain absolutely the same in character during the next ten years, and yet at the end of that period the proportion of bread-winners would be smaller than now, simply because the city would be ten years older, having, by consequence, a larger proportion of women and children. Again, suppose some factory industry to be introduced into a city which had none previously, say the manufacture of straw goods or of hosiery. We should doubtless have a speedy effect produced upon the population of the city through the accession of women and children coming to work in the shops, but we should have a much larger effect produced upon the proportion of bread-winners, through the entry into the shops of women and children previously resident. A thousand might come to the shops from outside the city, while three thousand or five might enter the shops from within the city.

Among the social causes adverted to as affecting the proportion of breadwinners may be mentioned the school system. In some cities the public schools are much more highly organized, more attractive, and are supported by a stronger public sentiment than in others. In the former class of cases we should look to see the influence of the schools acting in diminution of the number of young persons of either sex engaged in gainful occupations.

## Remarks upon the List of Occupations and upon the Numbers Returned under the several Titles.

### The Classification Adopted.

On this point, we quote the language of the reports of the census of 1870:

The plan pursued in the compilation of these tables has been to refer every specification of occupation to some grand division of industry, and within each of such grand divisions to constitute as many distinct subdivisions as the nature of the material furnished by the enumerators would allow to be formed with a reasonable approach to completeness, subject, however, to certain conditions, which will be presented in the further course of these remarks.

The Superintendent is familiar with the reasons which have induced many European statisticians to abandon the grouping of occupations, according to such assumed grand divisions of industry as agriculture, manufactures, trade, etc., and to resort, instead, to a system of expressing the employments of the people through a large number of minute and precise specifications, susceptible of being combined and recombined successively, according to different ideas or theories of classification; but he is convinced that the conditions and limitations of industrial statistics, at least within the United States, will not allow of such nicety in the treatment of material, and, moreover, that the highest purposes and the largest uses of such statistics require something closely approaching the plan of treatment adopted in the following tables.

It is, perhaps, not necessary to pursue the subject, but it may be interesting to note two things in this connection—

*First.* That the sub-division of labor and the organization of industry in the United States really correspond rather to the classification of occupations adopted in these tables than to the nicer distinctions of the foreign statisticians. Indeed, instead of throwing away valuable discriminations, the difficulty is so to treat the returns as reasonably to fill the classes here given. Whoever will consider the almost utter want of apprenticeship in this country, the facility with which pursuits are taken up and abandoned, and the variety and, indeed, seeming incongruity of the numerous industrial offices that are frequently united in one person, will appreciate the force of this argument. For example, the distinctions in the profession of the law, which are known and recognized decisively in England and on the Continent, are not maintained in this country, except in a few great cities, and there only in exceptional cases. The same person with us is law-scrivener, collector of debts, prosecutor of claims, counselor, attorney, possibly, also, judge. Again, the organization of domestic service in the United States is so crude that no distinction whatever can be successfully maintained. A census of occupations, in which an attempt should be made to reach anything like European completeness in this matter, would result in the return of tens of thousands of "house-keepers" and hundreds of thousands of "cooks," who were simply "maids of all work," being the single servants of the families in which they were employed. Again, the British distinction between the merchant and the shop-keeper is impossible in this country. If anything whatever could be predicated of the two classes, in this respect, it would be that the smaller dealers cling more pertinaciously to the larger title. Still again, the British "farmer" is wholly unknown with us. The American farmer is, at least in the vast proportion of instances, the owner of the land he cultivates.

*Second.* It is not deemed practicable in the United States that the average enumerator shall, in the course of a canvass necessarily hurried, fill a very large number of sub-divisions with appropriate entries without much loss and confusion. Of course accuracy of *definition* is of no value if the *content* be inadequate. It may even be doubted whether the enumerators of any country are capable of carrying out thoroughly any body of instructions respecting the returns of occupations which require more than the plain and simple characterization of each main employment in the common phrase of the working people themselves.

The employments reported in the census have been, for the purposes of this publication, brought under four general titles, viz: Agriculture, manufactures and mining, trade and transportation, personal and professional services, the latter having somewhat of a residual relation to the others, and yet in the main a substantial character, and with limits not hard to define.

The reason for making a common title for trade and transportation must be sufficiently evident without explanation.

Mining, which stands in idea between agriculture and manufactures, in that, like agriculture, it obtains the raw material of subsequent industrial processes, while, like manufactures, its agencies and forces are chiefly mechanical, not chemical, has, for convenience mainly, been assigned to the group of manufactures.

A still stronger consideration of convenience, though with somewhat less clear considerations of propriety, induced the superintendent to place the fishing industry in the category of manufactures. The number of persons engaged in the fisheries will always and inevitably be below the fact, for the reasons: *First.* That this industry is usually pursued for a season only, while, for the remainder of the year, the fisherman follows some other gainful avocation, under which he will preferably be reported. *Second.* That no inconsiderable proportion of the persons actually engaged on the water in this pursuit at the time of the enumeration, having no families to report them, are entirely omitted from the census under the American system. *Third.* That where fisheries are carried on in vessels larger than the ordinary row or sail boat the hands employed are generally known, not as fishermen, but as sailors. The last statement holds true of the vast majority of all persons who are engaged in the whale, cod, and mackeral fisheries. It is true that, according to the theory of a census of occupations taken in the interest of industrial science mainly, vessels so employed should, with all their hands, be excluded from the class of transportation and be returned as engaged in the fisheries; but this distinction is one which it appears hopeless to make. We are compelled, therefore, to accept the result that the great majority of persons engaged in the fisheries are returned as sailors merely. The residue are not worth constituting into a separate grand division of industry, and have, therefore, been carried into the manufacturing class.

THE COMPLETENESS OF THESE TABLES.—Comparison of the numbers reported in the tables of occupations with the numbers found under corresponding titles in the tables of manufactures, will discover discrepancies of very important extent which require to be here accounted for, not only in justification of the tables, but for the additional light which such an investigation throws upon the industrial capacity of the country.

Not only do important discrepancies exist, but they are found to be of two kinds, of diametrically opposite direction. In one class of cases the numbers reported in the tables of occupations appear to be too large; in the other, too small.

First, however, it needs to be stated just what constitutes a discrepancy. A failure in the numbers reported in the one place and in the other to balance exactly is not a discrepancy; on the contrary, this is to be expected; and if the numbers are found to be in excess in the proper set of tables, and to be in excess to only the proper extent, this furnishes statistical proof of a high character. The tables in which the numbers should thus be *generally* found in excess are the occupation tables. The reason for the excess being found in these tables and not in the others is, that the schedule of manufactures gives an *average* return of the number of "hands employed," while the statistics of occupations are taken from a count of individuals upon the population schedule, and present, therefore, a *maximum* return, embracing, as they do, artisans of every class out of employment, temporarily disabled, or for some other reason not included in the actual return of any establishment.

The degree to which such excess should extend will depend, within certain limits, upon the nature of the special occupation, as well as upon the general condition of manufacturing industry throughout the country at the time.

*First.* Those cases where the numbers in the tables of occupations do not exceed those in the tables of manufactures, but even fall below them. Instances of this kind are principally confined to the returns of factory operatives.

A portion of these omissions, undoubtedly, may be accounted for by the large number returned under the head of "mill and factory operatives not specified," as well as by the number of "employés of manufacturing establishments not specified;" but, in the main, the explanation of the discrepancies is found in the fact that women and children employed in factories are omitted in large numbers.

Thus, omissions may take place either through the failure of the enumerators to ask the questions relating to occupation concerning such persons, assuming that they have no avocation outside their homes, or from the indisposition of the persons themselves or the heads of the families to speak of them as in employment. Especially in the case of children, who are part of the time in school and part of the time in the mill, would the mother or father be likely to give a preference to the former over the latter mode of statement, particularly when, as in tens of thousands of cases the country over, the child comes within the period of life respecting which there is *a legal requirement* of school attendance.

When we come, however, to occupations pursued mainly by adults, and, indeed, almost exclusively by adult males, like the trades of carpenter, blacksmith, mason, or printer, or the professions of lawyer, physician, or clergyman, the force of this cause is no longer felt.

*Second.* Those instances where the numbers appearing in the tables of occupations exceed those in the tables of manufactures by more than the probable or possible difference between a maximum and an average return. Unlike the class first noted, these discrepancies affect mainly the statistics of those occupations which are pursued singly, or by twos and threes, out of large mills and factories, and even, in a considerable degree, out of shops. Discrepancies of this character in no degree discredit the statistics of occupations. They arise from the fact that the return of "productive industry" is not, as indeed it is not expected to be, a complete return of the mechanical production of the country.

The census attempts the enumeration of mechanical industry only as it is carried on IN SHOPS, and thus fails to embrace that large body of individual labor which is not attached to distinct "establishments of productive industry." Moreover, the census law establishes a minimum (namely, the value of $500 annually,) below which the production of shops shall not be returned.

Thus the trades of blacksmith, carpenter, mason, painter, and, in a somewhat smaller degree, of plumber, locksmith, harness-maker, are largely pursued by persons working singly and not occupying, for the purpose of their respective trades, what would be popularly recognized as "an establishment of productive industry," perhaps having only a chest of tools in some room of the house, and, perhaps, also engaged in their trades for only one season of the year and producing to less than the value of $500. The census has never obtained a full report of the production of these trades, so far as they are pursued out of shops or factories.

Again, in making such comparisons between the tables of occupations and those of manufactures, great care must be taken to ascertain whether the titles taken for the purpose really correspond. In some cases, where the apparent correspondence is greatest, the quantities are, in fact, not commensurable. An example may be found in the brick and tile manufacture. It would, at first, seem that the "hands employed" should answer to the "brick and tile-makers" in the tables of occupations, but, on the contrary, a considerable portion of the hands employed in large brick-yards, not infrequently exceeding, indeed, the number of craftsmen, are classed and known as common laborers, and are so returned in the census.

In the same way a factory producing fine furniture may report one hundred hands employed, but of these only eighty may be cabinet-makers in the usual, and, indeed, proper sense of that term, while the others may be simply unskilled laborers, or painters, varnishers, and locksmiths. In a currier's shop, not all the hands are necessarily curriers, in the craftsman's sense of that term. All textile factories employ persons who are not "operatives"—yard hands, watchmen, mill-wrights, or mechanics, and simple laborers, it may be, in considerable numbers.

There are, in addition, certain industries respecting which peculiar difficulties arise, from the distinct nature of the several avocations pursued under one roof in the same establishment. Thus, it might be supposed that the manufacture of "agricultural implements" is sufficiently distinct to secure a reasonably close comparison between the number of "hands employed" and the number of "agricultural implement makers" borne on the tables of occupations. But this is not so. A large establishment producing agricultural implements is really divided into a number of shops or factories, where perfectly distinct trades are carried on. There is the foundry, where the iron parts of the machine are cast, and the men working herein will report their occupation as that of foundrymen. There are carpenters' shops, where the wooden parts are made and shaped by carpenters, who call themselves by this term, and no other. There are also machine-shops, paint-shops, &c., where the artisans employed know themselves as machinists or mechanics, or as painters and varnishers, and not as makers of agricultural implements. As a result of the peculiarities of this branch of industry, the " hands employed " in the statistics of manufactures will exceed many times over the number of persons reporting themselves as " agricultural implement makers." An examination of the schedules from those towns where this industry is pursued, will reveal the operation of this cause.

On the other hand, the very success with which specific statements of occupation are, in most cases, obtained, serves to deplete some general title so far that the figures, if not interpreted in view of the specific titles, would be simply grotesque. Thus, the census reports but 7,858 " mechanics." As a matter of fact, there are many hundreds of thousands of mechanics in the United States, but all but the small residue mentioned have been reported in connection with individual mechanical trades. The small number of mechanics, therefore, instead of showing a failure of the enumeration in this respect, shows a rather striking degree of success in securing specific descriptions of the avocations of the people.

We have already adverted to the probable inclusion of a considerable number of laborers who are mainly engaged in agriculture among the class performing " personal and professional services " through the failure of the returns to indicate their avocations more precisely. In much the same way, doubtless, no small number of " messengers," " laborers," " watchmen," and " clerks," who are really employed in those capacities in connection with manufacturing establishments, have been transferred to other classes through the lack of more precise information regarding the field of their work.

### Incomplete Subdivision of Employments.

In addition to the apparent deficiencies or discrepancies which have been noted, one general remark will suffice in explanation of many of the entries in the tables in respect to the accuracy of which question may naturally arise.

It must be borne in mind that the number of persons who are reported under a certain specified occupation does not necessarily embrace all persons who perform the duties usually associated with that title, but only those who discharge such duties to the exclusion of other gainful occupations, or, at least, as their principal or sole professed means of support.

The organization of labor and the subdivision of industry vary in respect to completeness and minuteness with each successive community. As communities advance in industrial character, functions become separated and distinct occupations become recognized, and this country, from its peculiar conditions, presents almost every degree between the two extremes of industrial development in this particular. It is common to find on the returns from the present Territories, and even some of the present States of the Union, such entries as these ; " Carpenter and miner," " Blacksmith and carpenter," " Blacksmith and miner," and in many of the communities of the land it is difficult to draw distinctions much finer than those between the agricultural, the mining, the mechanical, and the commercial pursuit or profession. Indeed, even this is not always practicable, since it is matter of notoriety that in many of the States of the Union, and those not among the newest, the occupations of carpenter and farmer, or blacksmith and farmer, or farmer and fisherman, are frequently united in one person. In large and more prosperous communities a clear separation between such occupations takes place; yet the carpenter, for instance, in nine out of ten counties in the United States, performs half a dozen functions which, in cities, are recognized as belonging to distinct trades.

The same general process occurs in agricultural, commercial, and professional employments. Thus the tables show 112,840 traders and dealers whose branch of trade is not specified.

The want of specifications here is not due to the neglect of enumerators; but to the fact that these persons so characterized are actually selling agricultural implements, books and stationery, boots and shoes, etc., through pretty much the entire line of articles sold by those other dealers whose departments are defined because the communities in which they dwell and deal are sufficiently large to allow of the minute subdivision of trade.

If, therefore, we look at those occupations which emerge as distinct employments only in communities where the organization of industry and the subdivision of labor are carried to a high degree, the number of persons engaged will appear to be impossibly small unless the above considerations are borne carefully in mind.

### Anomalous Entries.

Other seeming discrepancies, which demand at least an allusion here, occur where persons are returned as of certain special occupations in States where it is notorious that the industries represented are not carried on; or, again, where persons, not more than one, two, or five in number, are returned in a State under a description which implies a large body of workmen. An adequate explanation of all cases of this general nature is found in the consideration that the census takes account of persons where they are actually residing, and assigns them to their habitual occupation, whether it is being at the time pursued or not.

In the enumeration of hundreds of thousands of persons out of health, or out of employment, traveling, or visiting friends in other States, it is inevitable that such apparent anomalies should arise.

N. B.—Each employment specified in the following tables must be understood in connection with the class or grand division of industry under which it is placed. To many, and, indeed, most of the specifications of occupation this warning, in the nature of the case, does not apply.

Others, however, will be misinterpreted without a reference to the more general title. Thus, "clerks and copyists" appear under the head, "Personal and professional services." These are clerks to lawyers, clerks to civil engineers, copyists not attached to commercial houses or manufacturing establishments, etc. "Clerks" also appear under the head of "Manufactures and mining," so far as persons are employed in a purely clerical capacity in those branches of industry; while under the title of "Trade and transportation" "clerks" appear several times as "clerks in stores," "clerks in banks," clerks in railroad offices," etc.

In publishing these tables of the occupations of the people, too great credit cannot be awarded to Mr. Edwin B. Smith, of Massachusetts, who has from the first had charge of the compilations relating to occupation, and on whom has rested the responsibility of all the details of classification and arrangement.

It would be difficult to convey an adequate impression of the care and labor involved in this work.

**OCCUPATIONS.**—*Number and sex of persons*

| STATES AND TERRITORIES. | POPULATION, TEN YEARS AND OVER. | | | ENGAGED IN ALL CLASSES OF OCCUPATIONS. | | | ENGAGED IN AGRICULTURE. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total. | Male. | Female. | Total. | Male. | Female. | Total. | Male. | Female. |
| The United States | 36,761.607 | 18,735,980 | 18,025,627 | 17,392,099 | 14,744,942 | 2 647,157 | 7,670,493 | 7,075,983 | 594,510 |
| 1. Alabama, . . . | 851.780 | 414,095 | 437 685 | 492,790 | 368,734 | 124,056 | 380,630 | 291,477 | 89,153 |
| 2. Arizona, . . . | 32.922 | 24,267 | 8,655 | 22,271 | 21,800 | 471 | 3,435 | 3,423 | 12 |
| 3. Arkansas, . . | 531,876 | 278,185 | 253,691 | 260.692 | 230,076 | 30.616 | 216 655 | 195 002 | 21,653 |
| 4. California, | 681,062 | 425.170 | 255 892 | 376,505 | 348 303 | 28 202 | 79,396 | 78 785 | 611 |
| 5. Colorado, . . | 158,220 | 110,896 | 47,324 | 101,251 | 96,472 | 4 779 | 13,539 | 13,462 | 77 |
| 6. Connecticut, . | 497 303 | 242 392 | 254,911 | 241.333 | 192.663 | 48,670 | 44,026 | 43 936 | 90 |
| 7. Dakota, . . | 99,849 | 64,343 | 35,506 | 57,844 | 54,993 | 2.851 | 28,508 | 28,368 | 140 |
| 8. Delaware, . . | 110.856 | 56.003 | 54 853 | 54.580 | 46.652 | 7,928 | 17,849 | 17.609 | 240 |
| 9. Dist.Columbia | 136 907 | 63,429 | 73.478 | 66 624 | 46,966 | 19,658 | 1,464 | 1,445 | 19 |
| 10. Florida, | 184,650 | 93,475 | 91,175 | 91,536 | 73,752 | 17,784 | 58,731 | 47,465 | 11.266 |
| 11. Georgia, . | 1,043 840 | 509,830 | 534 010 | 597,862 | 445,530 | 152,332 | 432,204 | 329,856 | 102,348 |
| 12. Idaho, . . . | 25,005 | 17,910 | 7.095 | 15.578 | 15.287 | 291 | 3,858 | 3.847 | 11 |
| 13. Illinois, . . . . | 2,269,315 | 1.178,131 | 1,091 184 | 999 780 | 893,679 | 106,101 | 436,371 | 433.796 | 2,575 |
| 14. Indiana, . . . | 1,468.095 | 752.405 | 715,690 | 635 080 | 583,658 | 51,422 | 331,240 | 329.614 | 1,626 |
| 15. Iowa, . . . . | 1,181,641 | 623,675 | 557,966 | 528,302 | 483,457 | 44 845 | 303 557 | 302,171 | 1,386 |
| 16. Kansas, . . . | 704,297 | 388,148 | 316.149 | 322 285 | 302,934 | 19,351 | 206,089 | 205,234 | 846 |
| 17. Kentucky, . | 1.163,498 | 586.424 | 577,074 | 519,854 | 465,432 | 54 422 | 320,571 | 315,445 | 5,126 |
| 18. Louisiana, . . | 649,070 | 322.004 | 327 066 | 363 228 | 268,176 | 95,052 | 205,306 | 147.538 | 57,768 |
| 19. Maine, . . | 519.669 | 258 587 | 261,082 | 231,993 | 198,465 | 33,528 | 82,130 | 81.887 | 243 |
| 20. Maryland, . | 695,364 | 341,621 | 353,743 | 324,432 | 265,632 | 58 800 | 90,927 | 89,176 | 1.751 |
| 21. Massachusetts, | 1,432,183 | 681,786 | 750,397 | 720,774 | 546,591 | 174,183 | 64,973 | 64,746 | 227 |
| 22. Michigan, . | 1 236,686 | 659 101 | 577,585 | 569,204 | 514 191 | 55,013 | 240.319 | 239,346 | 973 |
| 23. Minnesota, | 559,977 | 307,449 | 252.528 | 255,125 | 230,048 | 25.077 | 131.535 | 130,817 | 718 |
| 24. Mississippi, . | 753,693 | 375,561 | 378,132 | 415.506 | 305,089 | 110.417 | 339 938 | 252,324 | 87,614 |
| 25. Missouri, . . . | 1,557,631 | 816,962 | 740,669 | 692,959 | 630,016 | 62,943 | 355,297 | 351 681 | 3,616 |
| 26. Montana, . . . | 31,989 | 24,558 | 7,431 | 22.255 | 21,748 | 507 | 4,513 | 4,504 | 9 |
| 27. Nebraska, . . | 318,271 | 181,022 | 137,249 | 152.614 | 142.159 | 10 455 | 90.507 | 89,881 | 626 |
| 28. Nevada, | 50.666 | 36,211 | 14 455 | 32,233 | 30,730 | 1,503 | 4 180 | 4 146 | 34 |
| 29. N. Hampshire, | 286.188 | 139,807 | 146,381 | 142.468 | 112 340 | 30,128 | 44,490 | 44 299 | 191 |
| 30. New Jersey, . | 865,591 | 426,451 | 439,140 | 396,879 | 330,103 | 66,776 | 59,214 | 58 819 | 395 |
| 31. New Mexico, . | 87,966 | 48,266 | 39 700 | 40,822 | 38,560 | 2,262 | 14,139 | 14,025 | 114 |
| 32. New York, | 3,981.428 | 1,950.059 | 2.031,369 | 1,884,645 | 1,524 264 | 360,381 | 377.460 | 375,213 | 2,247 |
| 33. North Carolina | 959,951 | 465 268 | 494 683 | 480,187 | 393.211 | 86,976 | 360,937 | 314,228 | 46.709 |
| 34. Ohio, . . . . | 2,399,367 | 1 209,435 | 1,189 932 | 994.475 | 881,836 | 112 639 | 397,495 | 396,120 | 1,375 |
| 35. Oregon, . . | 130,565 | 81 031 | 49.534 | 67,343 | 64,564 | 2,779 | 27,091 | 27,000 | 91 |
| 36. Pennsylvania, | 3,203,215 | 1,591,056 | 1,612.159 | 1,456,067 | 1,239.084 | 216,983 | 301,112 | 299.809 | 1,303 |
| 37. Rhode Island, | 220,461 | 104.986 | 115,475 | 116,979 | 87,120 | 29,859 | 10 945 | 10.910 | 35 |
| 38. South Carolina | 667,456 | 324,364 | 343.092 | 392,102 | 272,015 | 120.087 | 294.602 | 208,672 | 85,930 |
| 39. Tennessee, | 1 062,130 | 524 559 | 537,571 | 447,970 | 391,562 | 56,408 | 294 153 | 275,620 | 18,533 |
| 40. Texas, . . . . | 1,064,196 | 568 928 | 495,268 | 522,133 | 463,190 | 58,943 | 359,317 | 330 125 | 29,192 |
| 41. Utah, . . . . . | 97,194 | 50.580 | 46.614 | 40,055 | 37,168 | 2,887 | 14,550 | 14,470 | 80 |
| 42. Vermont, . . | 264,052 | 132.036 | 132,016 | 118 584 | 102 417 | 16,167 | 55,251 | 55.037 | 214 |
| 43. Virginia, | 1,059,034 | 516,395 | 542,639 | 494.240 | 411,043 | 83.197 | 254 099 | 238 951 | 15,148 |
| 44. Washington, | 55,720 | 36,085 | 19 635 | 30,122 | 29,059 | 1.063 | 12,781 | 12,709 | 72 |
| 45. West Virginia, | 428,587 | 217,650 | 210,937 | 176,199 | 164,691 | 11,508 | 107,578 | 106,980 | 598 |
| 46. Wisconsin, . . | 965,712 | 503 434 | 462,278 | 417,455 | 371,062 | 46,393 | 195,901 | 194,380 | 1,521 |
| 47. Wyoming, . | 16,479 | 11,950 | 4,529 | 8,884 | 8,420 | 464 | 1,639 | 1,635 | 4 |

*engaged in each class, by States and Territories, 1880.*

| ENGAGED IN PROFESSIONAL AND PERSONAL SERVICES. | | | ENGAGED IN TRADE AND TRANSPORTATION. | | | ENGAGED IN MANUFACTURES AND MECHANICAL AND MINING INDUSTRIES. | | | |
|---|---|---|---|---|---|---|---|---|---|
| Total. | Male. | Female. | Total. | Male. | Female. | Total. | Male. | Female. | |
| 4,074,238 | 2 712 943 | 1.361,205 | 1,810,256 | 1,750.892 | 59,364 | 3.837,112 | 3,205 124 | 631,988 | |
| 72,211 | 41,187 | 31,024 | 16,953 | 16 609 | 344 | 22 996 | 19,461 | 3,535 | 1 |
| 8,210 | 7.870 | 340 | 3,252 | 3.235 | 17 | 7,374 | 7,272 | 102 | 2 |
| 23.466 | 15 284 | 8,182 | 9.233 | 9.158 | 75 | 11,338 | 10.632 | 706 | 3 |
| 121,435 | 103,207 | 18 228 | 57,392 | 56.621 | 771 | 118.282 | 109 690 | 8,592 | 4 |
| 24,813 | 21,233 | 3 580 | 15,491 | 15,338 | 153 | 47,408 | 46,439 | 969 | 5 |
| 51,296 | 30,647 | 20,649 | 29,920 | 28,888 | 1 032 | 116,091 | 89,192 | 26,899 | 6 |
| 14,016 | 11,655 | 2 361 | 6,219 | 6.180 | 39 | 9.101 | 8,790 | 311 | 7 |
| 17.616 | 12,055 | 5,561 | 4,967 | 4,704 | 263 | 14,148 | 12 284 | 1,864 | 8 |
| 39 975 | 23.664 | 16,311 | 9,848 | 9 176 | 672 | 15 337 | 12,681 | 2,656 | 9 |
| 17,923 | 12,098 | 5,825 | 6,446 | 6 386 | 60 | 8,436 | 7,803 | 633 | 10 |
| 104,269 | 62,027 | 42 242 | 25,222 | 24 693 | 529 | 36,167 | 28,954 | 7,213 | 11 |
| 3 861 | 3,651 | 210 | 1.327 | 1.321 | 6 | 6,532 | 6,468 | 61 | 12 |
| 229.467 | 157,084 | 72 383 | 128 372 | 125.328 | 3.044 | 265,570 | 177.471 | 28,099 | 13 |
| 137 281 | 100,056 | 37,225 | 56,432 | 55,292 | 1,140 | 110,127 | 98 696 | 11,431 | 14 |
| 103,932 | 69,575 | 31,357 | 50,872 | 50,212 | 660 | 69,941 | 61,499 | 8 442 | 15 |
| 53,507 | 38,289 | 15 218 | 26,379 | 26.119 | 260 | 36 319 | 33 292 | 3.027 | 16 |
| 104,239 | 63,438 | 40.801 | 33,563 | 32 761 | 802 | 61 481 | 53,788 | 7,693 | 17 |
| 98,111 | 66,138 | 31 973 | 29,130 | 28,041 | 1,089 | 30,681 | 26.459 | 4,222 | 18 |
| 47,411 | 31,604 | 15,807 | 29,790 | 29,090 | 700 | 72,662 | 55,881 | 16.778 | 19 |
| 98,934 | 59,057 | 39,877 | 49,234 | 46,785 | 2,449 | 85,337 | 70,614 | 14 723 | 20 |
| 170,160 | 100,445 | 69.715 | 115,376 | 109.154 | 6,222 | 370,265 | 272 246 | 98,019 | 21 |
| 143,249 | 103.244 | 40,005 | 54,723 | 53.317 | 1,406 | 130.913 | 118 284 | 12,629 | 22 |
| 59,452 | 39.741 | 19.711 | 24.349 | 23,979 | 370 | 39,789 | 35,511 | 4,278 | 23 |
| 49,448 | 28,563 | 20,885 | 12,975 | 12.849 | 126 | 13,145 | 11,353 | 1,792 | 24 |
| 148,588 | 102,403 | 46,185 | 79,300 | 77,721 | 1,579 | 109,774 | 98,211 | 11,563 | 25 |
| 6,954 | 6,539 | 415 | 2,766 | 2,759 | 7 | 8,022 | 7,946 | 76 | 26 |
| 28,746 | 20,766 | 7,980 | 15,106 | 14,983 | 123 | 18.255 | 16 529 | 1,726 | 27 |
| 10,373 | 9,275 | 1,098 | 4,449 | 4,431 | 18 | 13,231 | 12,878 | 353 | 28 |
| 28,206 | 16,158 | 12,048 | 11.735 | 11,208 | 527 | 58.037 | 40,675 | 17,362 | 29 |
| 110 722 | 75,763 | 34,959 | 66,382 | 63,874 | 2,508 | 160,561 | 131,647 | 28,914 | 30 |
| 19,042 | 17,241 | 1,801 | 3,264 | 3,252 | 12 | 4 377 | 4,042 | 335 | 31 |
| 537,897 | 332,068 | 205 829 | 339 419 | 324,304 | 15,115 | 629 869 | 492 679 | 137,199 | 32 |
| 69,321 | 34 774 | 34,547 | 15,966 | 15 793 | 173 | 33.963 | 28,416 | 5,547 | 33 |
| 250,371 | 173,909 | 76.462 | 104,315 | 101,445 | 2,870 | 242,294 | 210.362 | 31,932 | 34 |
| 16,645 | 14,688 | 1,957 | 6,149 | 6,106 | 43 | 17,458 | 16,770 | 688 | 35 |
| 446,713 | 318,194 | 128,519 | 179.965 | 169,664 | 10,301 | 528,277 | 451,417 | 76,860 | 36 |
| 24.657 | 15.497 | 9,160 | 15.217 | 14 641 | 576 | 66,160 | 46,072 | 20,088 | 37 |
| 64,246 | 34 309 | 29,937 | 13,556 | 13,147 | 409 | 19,698 | 15,887 | 3 811 | 38 |
| 94,107 | 60,304 | 33,803 | 23.628 | 23,196 | 432 | 36,082 | 32,442 | 3.640 | 39 |
| 97,561 | 70,178 | 27,383 | 34,909 | 34 649 | 260 | 30,346 | 28,238 | 2,108 | 40 |
| 11,144 | 9,271 | 1,873 | 4,149 | 4.026 | 123 | 10,212 | 9.401 | 811 | 41 |
| 28,174 | 16,022 | 12 152 | 8 945 | 8,772 | 173 | 26 214 | 22,586 | 3,628 | 42 |
| 146,664 | 87,681 | 58,983 | 30,418 | 29,804 | 614 | 63,059 | 54,607 | 8,452 | 43 |
| 6,640 | 5,829 | 811 | 3.405 | 3.339 | 16 | 7,296 | 7,132 | 164 | 44 |
| 31,680 | 22,361 | 9,319 | 10,653 | 10,510 | 143 | 26,288 | 24,840 | 1,448 | 45 |
| 97,494 | 64.259 | 33,235 | 37,550 | 36.454 | 1,096 | 86,510 | 75,969 | 10,541 | 46 |
| 4 611 | 3,642 | 369 | 1,545 | 1,528 | 17 | 1,689 | 1,615 | 74 | 47 |

**OCCUPATIONS.**—*Persons engaged in all classes of*

| STATES AND TERRITORIES. | Persons occupied. | AGE AND SEX. | | | | | |
|---|---|---|---|---|---|---|---|
| | | ALL AGES. | | 10 TO 15. | | 16 TO 59. | |
| | | Male. | Female. | Male. | Female. | Male. | Female. |
| The United States, . . . . | 17,392 099 | 14,744,942 | 2,647,157 | 825,187 | 293,169 | 12,986.111 | 2,283,115 |
| 1. Alabama, . . . . . . | 492,790 | 368 734 | 124,056 | 64,918 | 25,490 | 275,222 | 94,058 |
| 2. Arizona, . . . . . | 22,271 | 21,800 | 471 | 205 | 20 | 21.362 | 442 |
| 3. Arkansas, . . . . . . | 260 692 | 230,076 | 30,616 | 28,300 | 7.416 | 191 612 | 22,254 |
| 4. California, . . . . . . | 376,505 | 348 303 | 28,202 | 3,430 | 1,043 | 331,601 | 26.592 |
| 5. Colorado, . . . . . . | 101,251 | 96,472 | 4,779 | 815 | 171 | 94,080 | 4,563 |
| 6. Connecticut, . . . . . | 241,333 | 192.663 | 48,670 | 5,803 | 4 010 | 170,897 | 43.678 |
| 7. Dakota, . . . . . . . . | 57,844 | 54,993 | 2,851 | 714 | 179 | 53.001 | 2,632 |
| 8. Delaware, . . | 54,580 | 46,652 | 7,928 | 2,704 | 840 | 40.539 | 6,754 |
| 9. District of Columbia, | 66,624 | 46,966 | 19,658 | 617 | 594 | 44.084 | 18,518 |
| 10. Florida, . . . . | 91,536 | 73,752 | 17,784 | 6,532 | 3,312 | 62,193 | 13,688 |
| 11. Georgia, . . . . . . . . | 597,862 | 445.530 | 152,332 | 65 329 | 31,704 | 350,298 | 115,485 |
| 12. Idaho, . . . . . . . . | 15,578 | 15 287 | 291 | 101 | 17 | 14,876 | 269 |
| 13. Illinois, . . . . . . . . | 999 780 | 893 679 | 106.101 | 37,100 | 7.096 | 813 162 | 97,650 |
| 14. Indiana, . . . . . . . . | 635.080 | 583,658 | 51 422 | 32,628 | 3 550 | 517.055 | 46.972 |
| 15. Iowa, . . . . . . . . . | 528,302 | 483.457 | 44,845 | 17,832 | 2,462 | 439,119 | 41,790 |
| 16. Kansas, . . . . . . . | 322,285 | 302,934 | 19,351 | 13 225 | 1,222 | 277,935 | 17,789 |
| 17. Kentucky, . . . . . | 519,854 | 465,432 | 54,422 | 36,643 | 5,387 | 401 297 | 47,045 |
| 18. Louisiana, . . . . . . | 363,228 | 268,176 | 95,052 | 24.682 | 20 041 | 220.890 | 70 333 |
| 19. Maine, . . . . . . . . | 231 993 | 193 465 | 33.528 | 4,087 | 1.647 | 171,395 | 31,192 |
| 20. Maryland, . . . . . | 324,432 | 265,632 | 58,800 | 11,121 | 4,706 | 238,180 | 51,941 |
| 21. Massachusetts, . . . . | 720,774 | 546,591 | 174 183 | 12,306 | 9,062 | 494.878 | 162,199 |
| 22. Michigan, . . . . . . | 569,204 | 514 191 | 55,013 | 11,610 | 3,479 | 470.903 | 50,725 |
| 23. Minnesota, . . . . . . | 255,125 | 230,048 | 25,077 | 4 961 | 1 504 | 213.678 | 23,301 |
| 24. Mississippi, . . . . . . | 415,506 | 305,089 | 110,417 | 32.330 | 17,562 | 252,112 | 89 040 |
| 25. Missouri, . . . . . . . | 692,959 | 630,016 | 62,943 | 31,662 | 4,763 | 567,953 | 56,654 |
| 26. Montana, . . . . . . . | 22,255 | 21,748 | 507 | 100 | 25 | 21,375 | 477 |
| 27. Nebraska, . . . . . . | 152.614 | 142,159 | 10,455 | 3 816 | 730 | 133,420 | 9,573 |
| 28. Nevada, . . . . . . . | 32,233 | 30,730 | 1,503 | 109 | 42 | 30,129 | 1,431 |
| 29. New Hampshire, . . . | 142,468 | 112,340 | 30,128 | 2 593 | 1,709 | 96,485 | 27,820 |
| 30. New Jersey, . . . . . | 396,879 | 330,103 | 66,776 | 9,957 | 4,338 | 300,656 | 60,992 |
| 31. New Mexico, . . . . | 40,822 | 38.560 | 2 262 | 1 945 | 252 | 34.621 | 1,911 |
| 32. New York, . . . . . | 1,884,645 | 1.524.264 | 360,381 | 38,534 | 22 162 | 1,382,481 | 331,497 |
| 33. North Carolina, . . | 480,187 | 393.211 | 86 976 | 55 623 | 18,979 | 305,495 | 64 264 |
| 34. Ohio, . . . . . . . . . | 994,475 | 881,836 | 112 639 | 31 282 | 7,251 | 786,815 | 103,281 |
| 35. Oregon, . . . . . . . | 67,343 | 64 564 | 2,779 | 966 | 103 | 60,865 | 2,625 |
| 36. Pennsylvania, . . . | 1,456,067 | 1,239,084 | 216,983 | 53 895 | 18 546 | 1,108,079 | 193,816 |
| 37. Rhode Island, . . . . | 116,979 | 87 120 | 29,859 | 3 604 | 2 804 | 78,039 | 26.529 |
| 38. South Carolina, . | 392,102 | 272 015 | 120,087 | 31,765 | 20,113 | 218.698 | 94,658 |
| 39. Tennessee, . . . . . . | 447,970 | 391,562 | 56,408 | 44,292 | 10.056 | 320,814 | 44,071 |
| 40. Texas, . . . . . . . . | 522,133 | 463,190 | 58,943 | 36,934 | 10,790 | 404,959 | 46,453 |
| 41. Utah, . . . . . . . | 40,055 | 37 168 | 2 887 | 2,292 | 311 | 33,554 | 2,416 |
| 42. Vermont, . . . . . . | 118.584 | 102,417 | 16 167 | 2,598 | 1,054 | 87 386 | 14.649 |
| 43. Virginia, . . . . . . | 494,240 | 411.043 | 83,197 | 34 741 | 11 858 | 341 673 | 67,596 |
| 44. Washington, . . . . . | 30.122 | 29,059 | 1 063 | 337 | 54 | 27,875 | 990 |
| 45. West Virginia, . . . | 176,199 | 164 691 | 11,508 | 9.842 | 1,242 | 143,437 | 9,903 |
| 46. Wisconsin, . . . . . | 417,455 | 371,062 | 46,393 | 10,240 | 3,448 | 332,471 | 42,165 |
| 47. Wyoming, . . . . . | 8,884 | 8,420 | 464 | 67 | 25 | 8,262 | 434 |
| Population, (10 years and over,) . . . . . . . . . | 36,761,607 | 18,735,980 | 18,025,627 | 3,376,114 | 3,273,369 | 13,907,444 | 13,377,002 |

*occupations, by States and Territories, with age, sex, and nativity—1880.*

| AGE AND SEX. | | NATIVITY. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 60 AND OVER. | | United States. | Ireland. | Germany. | Great Britain. | Scandinavia.* | British America. | Other countries. | |
| Male. | Female. | | | | | | | | |
| 933,644 | 70,873 | 13.897 452 | 978,854 | 1,033,190 | 466,505 | 205,525 | 351,103 | 459,470 | |
| 28,594 | 4,508 | 487,376 | 1,190 | 1.691 | 622 | 96 | 92 | 1,723 | 1 |
| 233 | 9 | 11,641 | 1,156 | 999 | 867 | 120 | 403 | 7,085 | 2 |
| 10,164 | 946 | 154,142 | 1,350 | 1.785 | 676 | 153 | 250 | 2,336 | 3 |
| 13,072 | 567 | 175,406 | 35,939 | 27,430 | 20,094 | 4,743 | 11,441 | 101.452 | 4 |
| 1,577 | 45 | 72,127 | 6,206 | 4,805 | 7,739 | 1,877 | 3,941 | 4,556 | 5 |
| 15.963 | 982 | 171,798 | 37,697 | 8,327 | 10,366 | 1,468 | 8 746 | 2,931 | 6 |
| 1,278 | 40 | 30,264 | 2 883 | 4,710 | 2,618 | 9 262 | 4,859 | 3,248 | 7 |
| 3,409 | 334 | 49,470 | 3,188 | 660 | 912 | 47 | 77 | 226 | 8 |
| 2,265 | 546 | 58,664 | 3,615 | 2,456 | 980 | 44 | 152 | 713 | 9 |
| 5,027 | 784 | 86,410 | 329 | 459 | 532 | 186 | 215 | 3,405 | 10 |
| 29,903 | 5,143 | 592,956 | 1,770 | 1,581 | 729 | 137 | 134 | 555 | 11 |
| 310 | 5 | 8,168 | 768 | 602 | 1,441 | 376 | 392 | 3,831 | 12 |
| 43,417 | 1,355 | 702,599 | 60,901 | 122,636 | 39,734 | 32,222 | 14,560 | 27,128 | 13 |
| 33,975 | 900 | 566,774 | 12,421 | 38,746 | 7,193 | 1,728 | 2,146 | 6,072 | 14 |
| 26,506 | 593 | 397,531 | 22,970 | 49,087 | 16,850 | 20,242 | 8,438 | 13,184 | 15 |
| 11,774 | 340 | 268,846 | 8,023 | 15,863 | 10,365 | 6,256 | 4,889 | 8,043 | 16 |
| 27,492 | 1,990 | 491,361 | 8,280 | 14,444 | 2,423 | 71 | 489 | 2,786 | 17 |
| 22,604 | 4,678 | 334,840 | 6,652 | 8,847 | 1,814 | 260 | 434 | 10,381 | 18 |
| 22,983 | 689 | 204,987 | 5.993 | 369 | 3,714 | 519 | 15,551 | 860 | 19 |
| 16,331 | 2,153 | 282,954 | 11,297 | 23,067 | 3 945 | 212 | 471 | 2,486 | 20 |
| 39,407 | 2.922 | 478,368 | 122,604 | 9,637 | 34,449 | 3,471 | 63,441 | 8,804 | 21 |
| 31.678 | 809 | 373,376 | 22,480 | 47,621 | 29,700 | 8,172 | 70,912 | 16 943 | 22 |
| 11,409 | 272 | 118,509 | 14,366 | 36,236 | 7,524 | 52,356 | 14,427 | 11,707 | 23 |
| 20,647 | 3,815 | 410,798 | 1,358 | 1,410 | 619 | 194 | 158 | 969 | 24 |
| 30,401 | 1,526 | 580,133 | 27,487 | 56,810 | 10,879 | 2,041 | 4,213 | 11,396 | 25 |
| 273 | 5 | 13,400 | 1,942 | 1,262 | 1,303 | 382 | 1,744 | 2 222 | 26 |
| 4,923 | 152 | 104,900 | 5 742 | 17,212 | 5,785 | 6 296 | 3,567 | 9 112 | 27 |
| 492 | 30 | 13.764 | 2,688 | 1,623 | 3,484 | 377 | 2,317 | 7,980 | 28 |
| 13,262 | 599 | 117,547 | 6,544 | 455 | 2,495 | 153 | 14,979 | 295 | 29 |
| 19,490 | 1,446 | 293 613 | 47,563 | 34,612 | 18,986 | 1,249 | 1,667 | 9,189 | 30 |
| 1,994 | 99 | 36,373 | 612 | 569 | 360 | 53 | 216 | 2,639 | 31 |
| 103,249 | 6,722 | 1,240,850 | 266,744 | 192,932 | 76,471 | 8,434 | 40,272 | 58,942 | 32 |
| 32,093 | 3,733 | 477,836 | 591 | 461 | 427 | 23 | 94 | 755 | 33 |
| 63,739 | 2,107 | 806,730 | 36,996 | 92,885 | 30,273 | 1,005 | 7,297 | 19 289 | 34 |
| 2,733 | 51 | 44,788 | 2,393 | 3,146 | 2,688 | 1,178 | 1,499 | 11,651 | 35 |
| 77,110 | 4,621 | 1,162,426 | 123,428 | 86,523 | 55,262 | 4,756 | 5,363 | 18,309 | 36 |
| 5,477 | 526 | 75,404 | 19,107 | 1,116 | 8,913 | 587 | 10,496 | 1,356 | 37 |
| 21,552 | 5,316 | 388,587 | 1,186 | 1,428 | 437 | 38 | 55 | 471 | 38 |
| 26,456 | 2,281 | 438,738 | 2,899 | 1,980 | 1,282 | 1,039 | 192 | 1,840 | 39 |
| 21,297 | 1,700 | 464,371 | 5,503 | 18,448 | 4,332 | 1,228 | 1,308 | 26,943 | 40 |
| 1,322 | 160 | 20,903 | 515 | 544 | 11,915 | 2,137 | 857 | 3,184 | 41 |
| 12,433 | 464 | 99,121 | 5,577 | 231 | 1,895 | 49 | 11,474 | 237 | 42 |
| 34,629 | 3,743 | 487,986 | 2,067 | 1,839 | 1,471 | 37 | 176 | 664 | 43 |
| 847 | 19 | 18,694 | 1,578 | 1,534 | 1,705 | 838 | 1,476 | 4,297 | 44 |
| 11,412 | 363 | 167,821 | 2,915 | 3,376 | 1,349 | 10 | 155 | 573 | 45 |
| 28,351 | 780 | 217,716 | 20,611 | 90,214 | 18.082 | 29,221 | 14,785 | 25,826 | 46 |
| 91 | 5 | 5,486 | 730 | 522 | 805 | 182 | 283 | 876 | 47 |
| 1,452,422 | 1 375,256 | 30,270,306 | 1,802,200 | 1,911,200 | 891,630 | 365,460 | 696,860 | 823,951 | |

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* Sweden, Norway, and Denmark.

**OCCUPATIONS.**—*Persons engaged in agriculture,*

| STATES AND TERRITORIES. | Persons occupied. | AGE AND SEX. | | | | | |
|---|---|---|---|---|---|---|---|
| | | ALL AGES. | | 10 TO 15. | | 16 TO 59. | |
| | | Male. | Female. | Male. | Female. | Male. | Female. |
| The United States, . . . . | 7,670,493 | 7,075,983 | 594,510 | 584,867 | 135,862 | 5,888,133 | 435,920 |
| 1. Alabama, . . . . . . . | 380,630 | 291,477 | 89,153 | 53,854 | 20,608 | 213.143 | 65,996 |
| 2. Arizona, . . . . . . | 3,435 | 3,423 | 12 | 89 | . . . | 3,257 | 7 |
| 3. Arkansas, . . . . . . | 216 655 | 195 002 | 21,653 | 26,118 | 6,138 | 160,546 | 14,951 |
| 4. California, . . . . . . | 79.396 | 78,785 | 611 | 1,128 | 30 | 72 762 | 518 |
| 5. Colorado, . . . . . . . | 13,539 | 13,462 | 77 | 335 | 6 | 12,569 | 66 |
| 6. Connecticut, . . . . . | 44,026 | 43,936 | 90 | 1,214 | 3 | 34.632 | 62 |
| 7. Dakota, . . . . . . . . | 28,508 | 28,368 | 140 | 570 | 12 | 26,786 | 111 |
| 8. Delaware, . . . . . . | 17,849 | 17.609 | 240 | 1,634 | 36 | 14,308 | 160 |
| 9. District of Columbia, | 1,464 | 1,445 | 19 | 11 | . . . | 1.312 | 15 |
| 10. Florida, . . . . . . . | 58,731 | 47,405 | 11,266 | 5.649 | 2 680 | 38,108 | 8,121 |
| 11. Georgia, . . . . . . . | 432,204 | 329,856 | 102,348 | 56,695 | 25,908 | 248,513 | 73,484 |
| 12. Idaho, . . . . . . . . | 3,858 | 3,847 | 11 | 50 | . . | 3.667 | 9 |
| 13. Illinois, . . . . . . . | 436,371 | 433,796 | 2,575 | 27,998 | 310 | 378,360 | 1,953 |
| 14. Indiana, . . . . . . . . | 331 240 | 329,614 | 1,626 | 25,413 | 253 | 280,370 | 1,141 |
| 15. Iowa, . . . . . . . . . | 303,557 | 302,171 | 1,386 | 15,210 | 169 | 267,172 | 1,029 |
| 16. Kansas, . . . . . . . . | 206,080 | 205,234 | 846 | 11,781 | 83 | 184,294 | 648 |
| 17. Kentucky, . . . . . . | 320,571 | 315 445 | 5,126 | 30,141 | 885 | 263.684 | 3,729 |
| 18. Louisiana, . . . . . . | 205 306 | 147,538 | 57,768 | 20,045 | 16,416 | 110,917 | 39,356 |
| 19. Maine, . . . . . . . | 82,130 | 81.887 | 243 | 1,968 | 10 | 64,473 | 180 |
| 20. Maryland, . . . . . . | 90,927 | 89,176 | 1,751 | 5,510 | 256 | 75.245 | 1,323 |
| 21. Massachusetts, . . . . | 64,973 | 64,746 | 227 | 1,229 | 10 | 50,163 | 168 |
| 22. Michigan, . . . . . . | 240,319 | 239,346 | 973 | 7,185 | 76 | 210 264 | 750 |
| 23. Minnesota, . . . . . . | 131,535 | 130,817 | 718 | 3.669 | 48 | 118.254 | 593 |
| 24 Mississippi, . . . . . . | 339,938 | 252,324 | 87,614 | 29.300 | 15,449 | 204,993 | 69.655 |
| 25. Missouri, . . . . . . . | 355 297 | 351,681 | 3,616 | 24,043 | 255 | 305,431 | 2,896 |
| 26. Montana, . . . . . . . | 4,513 | 4,504 | 9 | 51 | 2 | 4,356 | 7 |
| 27. Nebraska, . . . . . . . | 90,507 | 89,881 | 626 | 3,233 | 81 | 82,658 | 485 |
| 28. Nevada, . . . . . . . | 4,180 | 4,146 | 34 | 37 | 1 | 3,960 | 31 |
| 29. New Hampshire, | 44,490 | 44 299 | 191 | 1,012 | 4 | 34,187 | 148 |
| 30. New Jersey, . . . . . | 59,214 | 58,819 | 395 | 1,878 | 6 | 49,539 | 310 |
| 31. New Mexico, . . . . . | 14,139 | 14,025 | 114 | 926 | 9 | 12,135 | 83 |
| 32. New York, . . . . . | 377,460 | 375,213 | 2,247 | 9.027 | 78 | 314,145 | 1,676 |
| 33. North Carolina, . . . | 300,937 | 314,228 | 46,709 | 47,329 | 12,227 | 239,690 | 32,720 |
| 34. Ohio, . . . . . . . . . | 397,495 | 396,120 | 1,375 | 17,729 | 90 | 338,313 | 1,076 |
| 35. Oregon, . . . . . . . . | 27,091 | 27,000 | 91 | 637 | 5 | 24,530 | 83 |
| 36. Pennsylvania, . . . . | 301.112 | 299,809 | 1,303 | 16 041 | 105 | 249,391 | 968 |
| 37. Rhode Island, . . . . | 10,945 | 10,910 | 35 | 192 | 1 | 8.789 | 22 |
| 38. South Carolina, . . | 294 602 | 208,672 | 85.930 | 27,453 | 16,602 | 162,992 | 65,872 |
| 39. Tennessee, . . . . . . | 294,153 | 275,620 | 18,533 | 36 338 | 5.728 | 218.316 | 11.952 |
| 40. Texas, . . . . . . . . . | 359,317 | 330,125 | 29,192 | 31,592 | 7,485 | 281,519 | 20,958 |
| 41. Utah, . . . . . . . . . | 14,550 | 14,470 | 80 | 1,351 | 17 | 12,617 | 58 |
| 42. Vermont, . . . . . . . | 55.251 | 55,037 | 214 | 1,670 | 10 | 44.356 | 160 |
| 43. Virginia, . . . . . . . | 254.099 | 238,951 | 15,148 | 22,601 | 3,370 | 192,101 | 10,895 |
| 44. Washington, . . . . . | 12,781 | 12,709 | 72 | 225 | 5 | 11,933 | 63 |
| 45. West Virginia, . . . . | 107,578 | 106,980 | 598 | 7,944 | 195 | 90,343 | 329 |
| 46. Wisconsin, . . . . . | 195,901 | 194,380 | 1,521 | 6,743 | 200 | 167,464 | 1,099 |
| 47. Wyoming, . . . . . . | 1,639 | 1,635 | 4 | 19 | . . . . . | 1,576 | 4 |

*by States and Territories, with age, sex, and nativity, 1880.*

| AGE AND SEX. | | NATIVITY. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 60 AND OVER. | | United States. | Ireland. | Germany. | Great Britain. | Scandinavia. | British America. | Other countries. | |
| Male. | Female. | | | | | | | | |
| 602,983 | 22,728 | 6 857,664 | 140 307 | 293,722 | 104,314 | 91,836 | 73,435 | 109,215 | |
| 24,480 | 2,549 | 379,780 | 170 | 447 | 75 | 10 | 11 | 137 | 1 |
| 77 | 5 | 2,339 | 59 | 69 | 82 | 14 | 58 | 814 | 2 |
| 8,338 | 564 | 214,002 | 242 | 593 | 215 | 45 | 74 | 1,484 | 3 |
| 4,895 | 63 | 48 662 | 5,220 | 4,231 | 3,465 | 738 | 2,291 | 14,789 | 4 |
| 558 | 5 | 10,963 | 288 | 584 | 660 | 160 | 304 | 580 | 5 |
| 8,090 | 25 | 37,737 | 3,908 | 859 | 773 | 217 | 264 | 268 | 6 |
| 1,012 | 17 | 12 531 | 1,025 | 2,743 | 1,129 | 6,525 | 2,518 | 2 037 | 7 |
| 1,667 | 44 | 17,321 | 288 | 65 | 132 | 6 | 19 | 18 | 8 |
| 122 | 4 | 1,163 | 100 | 126 | 58 | 1 | 3 | 13 | 9 |
| 3,708 | 465 | 57,813 | 51 | 94 | 150 | 73 | 49 | 501 | 10 |
| 24,648 | 2,956 | 431.643 | 150 | 178 | 92 | 60 | 9 | 72 | 11 |
| 130 | 2 | 2 711 | 102 | 105 | 512 | 108 | 60 | 260 | 12 |
| 27,438 | 312 | 347.727 | 15,191 | 42,356 | 12,360 | 8 776 | 3,342 | 6.619 | 13 |
| 23,831 | 232 | 306 868 | 2,971 | 15,539 | 1,906 | 804 | 639 | 2,513 | 14 |
| 19,789 | 188 | 228,819 | 12,586 | 29,073 | 9,295 | 11,986 | 4,340 | 7,458 | 15 |
| 9,159 | 115 | 172,013 | 4,393 | 10,380 | 6,212 | 4,217 | 3,034 | 5 831 | 16 |
| 21,620 | 512 | 315,656 | 1 366 | 2,173 | 297 | 18 | 36 | 1,025 | 17 |
| 16,576 | 1,996 | 201 930 | 285 | 547 | 168 | 25 | 49 | 2,302 | 18 |
| 15,446 | 53 | 77,743 | 760 | 39 | 336 | 206 | 2,966 | 80 | 19 |
| 8,421 | 172 | 86 641 | 1,577 | 2,130 | 390 | 14 | 33 | 142 | 20 |
| 13,354 | 49 | 54,090 | 6,491 | 429 | 1 237 | 165 | 2.200 | 361 | 21 |
| 21,897 | 147 | 174,239 | 7,711 | 18,735 | 11.414 | 1 224 | 22,120 | 4,876 | 22 |
| 8,894 | 77 | 53,603 | 7,990 | 21,749 | 3,941 | 31,336 | 6,102 | 6,724 | 23 |
| 18,031 | 2,510 | 338,808 | 440 | 240 | 195 | 39 | 53 | 163 | 24 |
| 22,207 | 465 | 327,116 | 3,854 | 16,616 | 2,927 | 666 | 1,080 | 3,038 | 25 |
| 97 | ..... | 3 214 | 296 | 199 | 264 | 60 | 340 | 140 | 26 |
| 3,990 | 60 | 60,728 | 2,886 | 11,459 | 3,433 | 4,142 | 2,030 | 5,829 | 27 |
| 149 | 2 | 2 474 | 150 | 218 | 232 | 63 | 260 | 783 | 28 |
| 9,100 | 39 | 42 551 | 550 | 55 | 254 | 13 | 1,030 | 37 | 29 |
| 7,402 | 79 | 51,572 | 2,855 | 2,841 | 1,118 | 101 | 64 | 663 | 30 |
| 964 | 22 | 13,242 | 50 | 69 | 60 | 2 | 27 | 689 | 31 |
| 52,041 | 493 | 312 607 | 24 046 | 17,800 | 12,197 | 739 | 6,171 | 3,900 | 32 |
| 27,209 | 1,762 | 360 230 | 331 | 38 | 158 | 4 | 52 | 124 | 33 |
| 40,078 | 209 | 356 312 | 5,621 | 23 733 | 6 162 | 170 | 859 | 4,638 | 34 |
| 1,833 | 3 | 23,085 | 644 | 1,023 | 895 | 197 | 518 | 729 | 35 |
| 34,377 | 230 | 278 745 | 7 728 | 9,086 | 3,092 | 608 | 357 | 1,496 | 36 |
| 1,929 | 12 | 9 483 | 693 | 54 | 253 | 64 | 197 | 201 | 37 |
| 18,227 | 3,456 | 294,069 | 185 | 181 | 81 | 4 | 11 | 71 | 38 |
| 20,966 | 853 | 291 417 | 429 | 348 | 215 | 897 | 40 | 807 | 39 |
| 17,014 | 749 | 333,325 | 996 | 10,453 | 1,469 | 455 | 460 | 12,159 | 40 |
| 502 | 5 | 8 469 | 75 | 84 | 4,459 | 723 | 168 | 572 | 41 |
| 9.011 | 44 | 49 198 | 1,905 | 35 | 609 | 6 | 3,457 | 41 | 42 |
| 24,249 | 883 | 252,588 | 412 | 401 | 527 | 3 | 55 | 113 | 43 |
| 551 | 4 | 9,613 | 622 | 631 | 609 | 344 | 498 | 464 | 44 |
| 8,693 | 74 | 105,700 | 631 | 750 | 210 | 2 | 17 | 268 | 45 |
| 20,173 | 222 | 95 815 | 11,915 | 44,079 | 9,856 | 15,782 | 5 118 | 13 336 | 46 |
| 40 | ...... | 1,219 | 69 | 85 | 140 | 24 | 52 | 50 | 47 |

## **OCCUPATIONS.**—*Persons engaged in professional and personal*

| STATES AND TERRITORIES. | Persons occupied. | AGE AND SEX. | | | | | |
|---|---|---|---|---|---|---|---|
| | | ALL AGES. | | 10 TO 15. | | 16 TO 59. | |
| | | Male. | Female. | Male. | Female. | Male. | Female. |
| The United States, . . . | 4,074,238 | 2,712 943 | 1,361,295 | 127.565 | 107,830 | 2 446,962 | 1 215 189 |
| 1. Alabama, . . . . . . | 72,211 | 41 187 | 31,024 | 9,913 | 4,477 | 29 261 | 24 688 |
| 2. Arizona, . . . . . . . | 8.210 | 7.870 | 340 | 102 | 17 | 7 708 | 319 |
| 3. Arkansas, . . . . . . | 23,466 | 15 284 | 8 182 | 1,963 | 1,238 | 12.192 | 6,597 |
| 4. California, . . . . . | 121,435 | 103 207 | 18,228 | 1,252 | 793 | 98.833 | 17,036 |
| 5. Colorado, . . . . . . | 24,813 | 21,233 | 3 580 | 240 | 155 | 20,642 | 3 392 |
| 6. Connecticut, . . . . | 51,296 | 30.647 | 20,649 | 443 | 854 | 27,726 | 19 076 |
| 7. Dakota, . . . . . . | 14,016 | 11,655 | 2.361 | 107 | 164 | 11,423 | 2,175 |
| 8. Delaware. . . . . | 17,616 | 12,055 | 5,561 | 610 | 629 | 10 579 | 4,686 |
| 9. District of Columbia, | 39.975 | 23 664 | 16,311 | 288 | 544 | 22,006 | 15 283 |
| 10. Florida, . . . . . . . | 17 923 | 12 098 | 5 825 | 603 | 582 | 10,801 | 4,951 |
| 11. Georgia, . . . . . . . | 104.269 | 62,027 | 42,242 | 7,298 | 5,123 | 51,813 | 35,061 |
| 12. Idaho, . . . . . . . . | 3 861 | 3,651 | 210 | 33 | 17 | 3 559 | 190 |
| 13. Illinois, . . . . . . . . | 229.467 | 157,084 | 72 383 | 4,310 | 5 050 | 145,587 | 66.569 |
| 14. Indiana, . . . . . . . . | 137 281 | 100.056 | 37.225 | 4 717 | 2 954 | 91.133 | 33 818 |
| 15. Iowa, . . . . . . . . . | 103,932 | 69,575 | 34 357 | 1,667 | 2 197 | 65,014 | 31,879 |
| 16. Kansas, . . . . . . . | 53 507 | 38,289 | 15,218 | 996 | 1.112 | 36,065 | 13,929 |
| 17. Kentucky, . . . . . | 104.239 | 63,438 | 40.801 | 4 649 | 4 069 | 56,467 | 35 399 |
| 18. Louisiana, . . . . . . | 98,111 | 66.138 | 31,973 | 3.637 | 3.450 | 59,654 | 26 084 |
| 19. Maine, . . . . . . | 47,411 | 31 604 | 15,807 | 620 | 580 | 28,287 | 14 821 |
| 20. Maryland, . . . . . . | 98,934 | 59,057 | 39,877 | 2 893 | 3 358 | 53 259 | 34 999 |
| 21. Massachusetts, . . . | 170,160 | 100,445 | 69.715 | 1.293 | 1 605 | 90,627 | 66.169 |
| 22. Michigan, . . . . . . | 143 249 | 103.244 | 40 005 | 2,160 | 2,914 | 97,020 | 36,668 |
| 23. Minnesota, . . . . . . | 59,452 | 39,741 | 19,711 | 775 | 1 353 | 37.801 | 18,201 |
| 24. Mississippi, . . . . . . | 49,448 | 28.563 | 20 885 | 2,688 | 1,990 | 24 372 | 17 628 |
| 25. Missouri, . . . . . . . | 148 588 | 102 403 | 46 185 | 4,302 | 3 755 | 94 352 | 41,568 |
| 26. Montana, . . . . . . | 6,954 | 6 539 | 415 | 40 | 22 | 6 448 | 388 |
| 27. Nebraska, . . . . | 28,746 | 20,766 | 7,980 | 404 | 634 | 19.964 | 7,274 |
| 28. Nevada, . . . . . | 10 373 | 9,275 | 1.098 | 53 | 38 | 9,085 | 1 038 |
| 29. New Hampshire, . . . | 28,206 | 16,158 | 12.048 | 253 | 345 | 14 458 | 11,346 |
| 30. New Jersey, . . . . . | 110,722 | 75,763 | 34,959 | 1 988 | 823 | 69 131 | 33,145 |
| 31. New Mexico, . . . . | 19.042 | 17 241 | 1 801 | 971 | 208 | 15 376 | 1,527 |
| 32. New York, . . . . | 537,897 | 332,068 | 205 829 | 8,932 | 10,254 | 303 176 | 191,249 |
| 33. North Carolina, . . . | 69,321 | 34,774 | 34.547 | 6 757 | 5 962 | 25 997 | 26.845 |
| 34. Ohio, . . . . . . . . | 250.371 | 173.909 | 76 462 | 5,662 | 5,220 | 159 325 | 69,962 |
| 35. Oregon, . . . . . . . | 16,645 | 14 688 | 1,957 | 182 | 93 | 14 117 | 1,826 |
| 36. Pennsylvania, . . . . | 446 713 | 318.194 | 128.519 | 15 110 | 11.569 | 284 711 | 113,947 |
| 37. Rhode Island, . . . | 24 657 | 15.497 | 9 160 | 241 | 212 | 14 166 | 8,586 |
| 38. South Carolina, . . | 64,246 | 34 309 | 29 937 | 3 704 | 3 220 | 28 945 | 25,024 |
| 39. Tennessee, . . . . | 94,107 | 60.304 | 33 803 | 6.950 | 4,125 | 50.441 | 28,375 |
| 40. Texas, . . . . . . . . . | 97,561 | 70,178 | 27 383 | 4,612 | 3 264 | 62,976 | 23 215 |
| 41. Utah, . . . . . . . . | 11,144 | 9,271 | 1 873 | 697 | 247 | 8,314 | 1,550 |
| 42. Vermont, . . . . . . | 28 174 | 16,022 | 12.152 | 406 | 875 | 14 180 | 10 961 |
| 43. Virginia, . . . . . . . | 146 664 | 87.681 | 58,983 | 9,997 | 7,898 | 72 024 | 48 513 |
| 44. Washington, . . . . | 6,640 | 5 829 | 811 | 59 | 47 | 5,649 | 752 |
| 45. West Virginia, . . . . | 31 680 | 22 361 | 9,319 | 1,249 | 1,006 | 19,908 | 8,069 |
| 46. Wisconsin, . . . . . | 97,494 | 64,259 | 33.235 | 1,706 | 2,763 | 58,866 | 30,072 |
| 47. Wyoming, . . . . . | 4,011 | 3 642 | 369 | 33 | 25 | 3,584 | 339 |

*services, by States and Territories, with age, sex, and nativity—1880.*

| AGE AND SEX. | | NATIVITY. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 60 AND OVER. | | United States. | Ireland. | Germany. | Great Britain. | Scandinavia. | British America. | Other countries. | |
| Male. | Female. | | | | | | | | |
| 138,416 | 38,276 | 3,076 768 | 415 854 | 218 867 | 79 963 | 52,860 | 90,614 | 139,312 | |
| 2,013 | 1,859 | 71 100 | 340 | 188 | 113 | 29 | 17 | 424 | 1 |
| 60 | 4 | 3 440 | 465 | 332 | 199 | 33 | 92 | 3,656 | 2 |
| 1 129 | 347 | 22 043 | 559 | 265 | 152 | 40 | 61 | 346 | 3 |
| 3,122 | 399 | 50 993 | 15 041 | 6 389 | 4 360 | 1,301 | 2,453 | 40,898 | 4 |
| 351 | 33 | 18,012 | 1,829 | 1,030 | 1,075 | 526 | 849 | 1,192 | 5 |
| 2,478 | 719 | 32,095 | 14,335 | 1 380 | 1 306 | 424 | 1,054 | 702 | 6 |
| 125 | 22 | 8 273 | 982 | 1,022 | 547 | 1,599 | 947 | 646 | 7 |
| 866 | 246 | 15,282 | 1,838 | 159 | 230 | 15 | 18 | 74 | 8 |
| 1,370 | 484 | 36,178 | 2 157 | 745 | 454 | 17 | 83 | 341 | 9 |
| 694 | 292 | 16 945 | 110 | 68 | 106 | 31 | 58 | 605 | 10 |
| 2,916 | 2,058 | 103,004 | 640 | 263 | 157 | 27 | 35 | 143 | 11 |
| 59 | 3 | 2,231 | 198 | 158 | 336 | 104 | 91 | 743 | 12 |
| 7,187 | 764 | 152,935 | 23,054 | 27,076 | 6,604 | 9 601 | 3,296 | 6 901 | 13 |
| 4,206 | 453 | 122,324 | 4,910 | 6,910 | 1,194 | 377 | 496 | 1 070 | 14 |
| 2,894 | 281 | 79,085 | 5,453 | 7,886 | 2 260 | 4,845 | 1,714 | 2 689 | 15 |
| 1,228 | 177 | 46 386 | 1,466 | 1,822 | 1,321 | 916 | 6 7 | 959 | 16 |
| 2,382 | 1,333 | 97,087 | 3 393 | 2,752 | 372 | 17 | 115 | 503 | 17 |
| 2,847 | 2,439 | 88,522 | 3,574 | 2,495 | 558 | 84 | 145 | 2,733 | 18 |
| 2,697 | 406 | 39,949 | 2,627 | 46 | 656 | 97 | 3 779 | 257 | 19 |
| 2,905 | 1,520 | 87,203 | 5,012 | 5,009 | 756 | 53 | 113 | 788 | 20 |
| 8,525 | 1,941 | 93 160 | 52 684 | 1,763 | 5,304 | 1,061 | 13,605 | 2,583 | 21 |
| 4,064 | 423 | 87,677 | 7,059 | 10,998 | 5 850 | 3,217 | 23,600 | 4,848 | 22 |
| 1,165 | 157 | 29,635 | 3 496 | 6,300 | 1,138 | 12 863 | 3,585 | 2,435 | 23 |
| 1 503 | 1,267 | 48,562 | 357 | 175 | 98 | 37 | 24 | 195 | 24 |
| 3 749 | 862 | 118 760 | 12,274 | 11,483 | 1 922 | 555 | 861 | 2,733 | 25 |
| 51 | 5 | 4,231 | 649 | 474 | 280 | 92 | 515 | 713 | 26 |
| 398 | 72 | 20 376 | 1,393 | 2 601 | 867 | 1 089 | 605 | 1,815 | 27 |
| 137 | 22 | 4 089 | 625 | 404 | 585 | 106 | 731 | 3,833 | 28 |
| 1 447 | 357 | 22 382 | 2,220 | 67 | 369 | 65 | 3,019 | 84 | 29 |
| 4,644 | 991 | 72 337 | 24,232 | 7,418 | 3,257 | 500 | 384 | 2,591 | 30 |
| 894 | 66 | 17,396 | 198 | 133 | 80 | 11 | 55 | 1,169 | 31 |
| 19,960 | 4 326 | 317,201 | 128,527 | 42,844 | 16 844 | 2 899 | 13 359 | 16,223 | 32 |
| 2,020 | 1,740 | 68 941 | 95 | 67 | 50 | 3 | 10 | 155 | 33 |
| 8,922 | 1,280 | 200,364 | 17 217 | 20 678 | 5,261 | 313 | 2,128 | 4,410 | 34 |
| 389 | 38 | 9,627 | 827 | 640 | 510 | 246 | 335 | 4,460 | 35 |
| 18,373 | 3,003 | 351 332 | 56,410 | 23,532 | 6,189 | 1 534 | 1,746 | 5 970 | 36 |
| 1,090 | 362 | 13,669 | 7,582 | 206 | 936 | 217 | 1,613 | 434 | 37 |
| 1,660 | 1 693 | 63 429 | 413 | 210 | 88 | 15 | 14 | 77 | 38 |
| 2,913 | 1,303 | 92,331 | 991 | 292 | 173 | 34 | 29 | 257 | 39 |
| 2,590 | 904 | 82,160 | 1,814 | 2,478 | 958 | 369 | 279 | 9,503 | 40 |
| 260 | 76 | 6,024 | 221 | 186 | 2 675 | 635 | 83 | 1,320 | 41 |
| 1,436 | 316 | 22,629 | 1,642 | 39 | 284 | 17 | 3,486 | 77 | 42 |
| 5,660 | 2,572 | 145 267 | 686 | 269 | 242 | 8 | 36 | 156 | 43 |
| 121 | 12 | 3,737 | 491 | 358 | 315 | 141 | 312 | 1,286 | 44 |
| 1,204 | 244 | 29,869 | 851 | 667 | 153 | 1 | 40 | 99 | 45 |
| 3,687 | 400 | 56 145 | 4,490 | 18,327 | 2 515 | 6,634 | 3,999 | 5,384 | 46 |
| 25 | 5 | 2,351 | 427 | 263 | 264 | 69 | 108 | 529 | 47 |

**OCCUPATIONS.**—*Persons engaged in trade and transportation,*

| STATES AND TERRITORIES. | Persons occupied. | AGE AND SEX. | | | | | |
|---|---|---|---|---|---|---|---|
| | | ALL AGES. | | 10 TO 15. | | 16 TO 59. | |
| | | Male. | Female. | Male. | Female. | Male. | Female. |
| The United States, . | 1,810,256 | 1,750,892 | 59,364 | 26,078 | 2,547 | 1,672,171 | 54,849 |
| 1. Alabama, . . . . . . . . | 16,953 | 16,609 | 344 | 378 | 11 | 15,592 | 307 |
| 2. Arizona, . . . . | 3,252 | 3,235 | 17 | 5 | . . . . | 3,209 | 17 |
| 3. Arkansas, . . . . . . . . | 9,233 | 9,158 | 75 | 81 | 1 | 8,881 | 67 |
| 4. California, . . . . . . . | 57,392 | 56,621 | 771 | 429 | 27 | 54,843 | 714 |
| 5. Colorado, . . . . . . | 15,491 | 15,338 | 153 | 100 | 2 | 15,088 | 149 |
| 6. Connecticut, . . . . . . | 29,920 | 28,888 | 1,032 | 391 | 70 | 27,354 | 951 |
| 7. Dakota, . . . . . . . . | 6,219 | 6,180 | 39 | 30 | 2 | 6,111 | 37 |
| 8. Delaware, . . . . . | 4,967 | 4,704 | 263 | 59 | 2 | 4,400 | 251 |
| 9. District of Columbia, | 9,848 | 9,176 | 672 | 197 | 18 | 8,729 | 636 |
| 10. Florida, . . . . . . . | 6,446 | 6,386 | 60 | 80 | . . . . | 6,115 | 49 |
| 11. Georgia, . . . . . . . . | 25,222 | 24,693 | 529 | 441 | 14 | 23,608 | 484 |
| 12. Idaho, . . . . . . . . . | 1,327 | 1,321 | 6 | 7 | . . . | 1,299 | 6 |
| 13. Illinois, . . . . . . . . | 128,372 | 125,328 | 3,044 | 1,564 | 179 | 121,123 | 2,829 |
| 14. Indiana, . . . . . . . | 56,432 | 55,292 | 1,140 | 648 | 19 | 53,039 | 1,067 |
| 15. Iowa, . . . . . . . . . | 50,872 | 50,212 | 660 | 330 | 16 | 48,777 | 630 |
| 16. Kansas, . . . . . . . . | 26,379 | 26,119 | 260 | 176 | 8 | 25,602 | 249 |
| 17. Kentucky, . . . . . . . | 33 563 | 32,761 | 802 | 499 | 18 | 31,303 | 755 |
| 18. Louisiana, . . . . . . | 29,130 | 28,041 | 1,089 | 522 | 21 | 26,301 | 971 |
| 19. Maine, . . . . . . . . | 29,790 | 29,090 | 700 | 179 | 12 | 27,514 | 673 |
| 20. Maryland, . . . . . . . | 49,234 | 46,785 | 2,449 | 797 | 75 | 44,554 | 2,230 |
| 21. Massachusetts, . . . . | 115,376 | 109,154 | 6,222 | 1,193 | 175 | 103,580 | 5,941 |
| 22. Michigan, . . . . . . | 54,723 | 53,317 | 1,406 | 500 | 56 | 51,368 | 1,333 |
| 23. Minnesota, . . . . . . . | 24,349 | 23,979 | 370 | 208 | 6 | 23 422 | 358 |
| 24. Mississippi, . . . . . | 12,975 | 12,849 | 126 | 154 | 2 | 12,343 | 110 |
| 25. Missouri, . . . . . . . | 79,300 | 77,721 | 1,579 | 1,137 | 59 | 75,277 | 1,484 |
| 26. Montana, . . . . . . . | 2,766 | 2 759 | 7 | 3 | . . . . . | 2,741 | 7 |
| 27. Nebraska, . . . . . . . | 15,106 | 14,983 | 123 | 87 | 2 | 14 751 | 120 |
| 28. Nevada, . . . . . . . | 4,449 | 4,431 | 18 | 11 | . . . . | 4,370 | 18 |
| 29. New Hampshire, . . | 11,735 | 11,208 | 527 | 71 | 7 | 10,618 | 518 |
| 30. New Jersey, . . . . . . | 66,382 | 63,874 | 2,508 | 978 | 132 | 60,806 | 2,285 |
| 31. New Mexico, . . . . . . | 3,264 | 3,252 | 12 | 30 | 1 | 3,172 | 11 |
| 32. New York, . . . . . . | 339,419 | 324 304 | 15,115 | 6,856 | 931 | 307,563 | 13,774 |
| 33. North Carolina, . . . | 15,966 | 15,793 | 173 | 306 | 11 | 14,910 | 136 |
| 34. Ohio, . . . . . . . . . . | 104,315 | 101,445 | 2,870 | 1,785 | 146 | 95,415 | 2,623 |
| 35. Oregon, . . . . . . . . . | 6,149 | 6,106 | 43 | 52 | 1 | 5,930 | 40 |
| 36. Pennsylvania, . . . . | 179,965 | 169,664 | 10 301 | 3,418 | 386 | 160,049 | 9,469 |
| 37. Rhode Island, . . . . | 15,217 | 14 641 | 576 | 214 | 15 | 13,806 | 549 |
| 38. South Carolina, . . . | 13,556 | 13,147 | 409 | 183 | 8 | 12 577 | 347 |
| 39. Tennessee, . . . . . . | 23 623 | 23,196 | 432 | 361 | 7 | 22,172 | 401 |
| 40. Texas, . . . . . . . . . . | 34,909 | 34,649 | 260 | 465 | 7 | 33,537 | 239 |
| 41. Utah, . . . . . . . . . | 4 149 | 4 026 | 123 | 86 | 15 | 3 850 | 97 |
| 42. Vermont, . . . . . . . . | 8,945 | 8,772 | 173 | 80 | 3 | 8 285 | 167 |
| 43. Virginia, . . . . . . . . | 30,418 | 29,804 | 614 | 374 | 13 | 28,412 | 554 |
| 44. Washington, . . . . . . | 3 405 | 3,389 | 16 | 15 | . . . . . | 3,338 | 16 |
| 45 West Virginia, . . . | 10,653 | 10,510 | 143 | 122 | 9 | 10,066 | 127 |
| 46. Wisconsin, . . . . . | 37,550 | 36,454 | 1,096 | 463 | 60 | 34,866 | 1,016 |
| 47. Wyoming, . . . . . | 1,545 | 1,528 | 17 | 13 | . . . . . | 1,505 | 17 |

*by States and Territories, with age, sex, and nativity, 1880.*

| AGE AND SEX. | | NATIVITY. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 60 AND OVER. | | United States. | Ireland. | Germany. | Great Britain. | Scandinavia. | British America. | Other countries. | |
| Male. | Female. | | | | | | | | |
| 52, 643 | 1,968 | 1,351,695 | 138,518 | 152,491 | 56 498 | 16,214 | 33,119 | 61,721 | |
| 639 | 26 | 15,357 | 369 | 638 | 138 | 30 | 26 | 395 | 1 |
| 21 | .... | 1,534 | 79 | 169 | 70 | 9 | 42 | 1.349 | 2 |
| 196 | 7 | 8,605 | 348 | 488 | 97 | 22 | 37 | 236 | 3 |
| 1,349 | 30 | 27 667 | 6.009 | 7,473 | 3,400 | 1,143 | 1,498 | 10,202 | 4 |
| 150 | 2 | 11,458 | 1,059 | 857 | 695 | 164 | 485 | 773 | 5 |
| 1,143 | 11 | 22.501 | 3 514 | 991 | 818 | 57 | 385 | 654 | 6 |
| 39 | .... | 4 043 | 406 | 352 | 216 | 565 | 431 | 206 | 7 |
| 245 | 10 | 4 540 | 204 | 94 | 77 | 7 | 6 | 39 | 8 |
| 250 | 18 | 8 373 | 630 | 517 | 129 | 7 | 25 | 167 | 9 |
| 191 | 11 | 5 203 | 89 | 166 | 121 | 40 | 48 | 779 | 10 |
| 644 | 31 | 23,399 | 579 | 775 | 207 | 19 | 52 | 191 | 11 |
| 15 | .... | 829 | 37 | 72 | 134 | 16 | 46 | 193 | 12 |
| 2,641 | 36 | 85 445 | 10,359 | 16,813 | 5,316 | 3.370 | 2 910 | 4,159 | 13 |
| 1,605 | 34 | 47.608 | 2,121 | 4.651 | 794 | 156 | 358 | 744 | 14 |
| 1,105 | 14 | 39,447 | 2 864 | 3,959 | 1.488 | 1,174 | 888 | 1,052 | 15 |
| 341 | 3 | 21 887 | 1,171 | 1.321 | 755 | 321 | 491 | 433 | 16 |
| 959 | 29 | 28,373 | 1.418 | 2,854 | 363 | 10 | 101 | 444 | 17 |
| 1.218 | 97 | 21 562 | 1 548 | 2,605 | 542 | 84 | 96 | 2,693 | 18 |
| 1 397 | 15 | 27 572 | 590 | 78 | 321 | 57 | 980 | 192 | 19 |
| 1,434 | 144 | 41,367 | 2 022 | 4,482 | 610 | 95 | 95 | 563 | 20 |
| 4.381 | 106 | 92 863 | 11 071 | 1.301 | 3,259 | 287 | 4,445 | 2,150 | 21 |
| 1,449 | 17 | 37 402 | 2,484 | 4 329 | 2,838 | 485 | 5,507 | 1,678 | 22 |
| 349 | 6 | 14 314 | 1 521 | 2 727 | 858 | 2,672 | 1,346 | 911 | 23 |
| 352 | 14 | 11,514 | 271 | 632 | 109 | 38 | 25 | 386 | 24 |
| 1,307 | 36 | 59,554 | 5,477 | 9,335 | 1.821 | 238 | 972 | 1.903 | 25 |
| 15 | .... | 1,961 | 142 | 174 | 113 | 39 | 226 | 111 | 26 |
| 145 | 1 | 11,084 | 908 | 1,186 | 523 | 416 | 385 | 604 | 27 |
| 50 | .... | 2,289 | 225 | 358 | 238 | 36 | 235 | 1,068 | 28 |
| 519 | 2 | 10,414 | 492 | 52 | 136 | 8 | 602 | 31 | 29 |
| 2,090 | 91 | 50,008 | 5,944 | 6,019 | 2.524 | 141 | 323 | 1,423 | 30 |
| 50 | ... | 2,516 | 175 | 185 | 66 | 10 | 47 | 265 | 31 |
| 9,885 | 410 | 225,349 | 43,684 | 39.170 | 13,406 | 1,348 | 4 908 | 11 554 | 32 |
| 577 | 26 | 15 394 | 68 | 254 | 63 | 5 | 9 | 173 | 33 |
| 4,245 | 101 | 77.957 | 5 949 | 12,801 | 3.201 | 146 | 1 165 | 3,096 | 34 |
| 124 | 2 | 3,831 | 300 | 519 | 316 | 79 | 160 | 944 | 35 |
| 6,197 | 446 | 143 513 | 16,044 | 11,305 | 5,346 | 367 | 708 | 2 682 | 36 |
| 621 | 12 | 11.974 | 1,724 | 171 | 664 | 24 | 448 | 212 | 37 |
| 387 | 54 | 12,170 | 328 | 705 | 115 | 8 | 11 | 219 | 38 |
| 663 | 24 | 21.444 | 837 | 611 | 228 | 28 | 47 | 433 | 39 |
| 647 | 14 | 26,426 | 1,742 | 2,632 | 839 | 209 | 258 | 2,803 | 40 |
| 90 | 11 | 2 161 | 93 | 78 | 1,268 | 93 | 66 | 390 | 41 |
| 407 | 3 | 7,556 | 498 | 44 | 98 | 1 | 727 | 21 | 42 |
| 1,018 | 47 | 28,940 | 531 | 538 | 196 | 6 | 28 | 179 | 43 |
| 36 | ... | 1.548 | 163 | 168 | 206 | 91 | 116 | 1,113 | 44 |
| 322 | 7 | 9,391 | 563 | 502 | 102 | .... | 22 | 73 | 45 |
| 1,125 | 20 | 21,877 | 1,752 | 7,273 | 1 559 | 2.045 | 1,280 | 1,764 | 46 |
| 10 | .... | 1,075 | 116 | 67 | 115 | 48 | 53 | 71 | 47 |

**OCCUPATIONS.**—*Persons engaged in manufactures, and mechanical and*

| STATES AND TERRITORIES. | Persons occupied. | AGE AND SEX. | | | | | |
|---|---|---|---|---|---|---|---|
| | | ALL AGES. | | 10 TO 15. | | 16 TO 59. | |
| | | Male. | Female. | Male. | Female. | Male. | Female. |
| The United States, | 3,837,112 | 3,205 124 | 631,988 | 86 677 | 46,930 | 2,978,845 | 577,157 |
| 1. Alabama, | 22,996 | 19 461 | 3,535 | 773 | 394 | 17,226 | 3,067 |
| 2. Arizona, | 7,374 | 7 272 | 102 | 9 | 3 | 7.188 | 99 |
| 3. Arkansas, | 11.338 | 10 632 | 706 | 138 | 39 | 9.993 | 639 |
| 4. California, | 118.282 | 109.690 | 8 592 | 621 | 193 | 105.363 | 8 324 |
| 5. Colorado, | 47,408 | 46.439 | 969 | 140 | 8 | 45,781 | 956 |
| 6. Connecticut, | 116,091 | 89.192 | 26 899 | 3,755 | 3 083 | 81,185 | 23,589 |
| 7. Dakota, | 9,101 | 8 790 | 311 | 7 | 1 | 8.681 | 309 |
| 8. Delaware, | 14.148 | 12,284 | 1.864 | 401 | 173 | 11,252 | 1.657 |
| 9. District of Columbia, | 15 337 | 12 681 | 2,656 | 121 | 32 | 12,037 | 2 584 |
| 10. Florida, | 8,436 | 7,803 | 633 | 200 | 50 | 7,169 | 567 |
| 11. Georgia, | 36 167 | 28 954 | 7,213 | 895 | 659 | 26.364 | 6 456 |
| 12 Idaho, | 6 532 | 6,468 | 64 | 11 | . . | 6 351 | 64 |
| 13. Illinois, | 205 570 | 177.471 | 28,099 | 3,228 | 1,557 | 168,092 | 26,299 |
| 14. Indiana, | 110,127 | 98,696 | 11.431 | 1,850 | 324 | 92,513 | 10 926 |
| 15. Iowa, | 69,941 | 61,499 | 8 442 | 625 | 80 | 58,156 | 8,252 |
| 16. Kansas. | 36,319 | 33,292 | 3 027 | 272 | 19 | 31,974 | 2 963 |
| 17. Kentucky, | 61.481 | 53 788 | 7 693 | 1,354 | 415 | 49 903 | 7,162 |
| 18. Louisiana, | 30,681 | 26.459 | 4,222 | 478 | 154 | 24.018 | 3,922 |
| 19. Maine, | 72,662 | 55.884 | 16.778 | 1,320 | 1.045 | 51.121 | 15,518 |
| 20. Maryland, | 85 337 | 70,614 | 14,723 | 1,921 | 1,017 | 65,122 | 13,389 |
| 21. Massachusetts, | 370,265 | 272,246 | 98.019 | 8,591 | 7,272 | 250,508 | 89,921 |
| 22. Michigan. | 130,913 | 118.284 | 12.629 | 1,765 | 433 | 112.251 | 11 974 |
| 23. Minnesota, | 39,789 | 35.511 | 4,278 | 309 | 97 | 34 201 | 4,149 |
| 24. Mississippi, | 13.145 | 11,353 | 1,792 | 188 | 121 | 10 404 | 1 647 |
| 25. Missouri, | 109,774 | 98 211 | 11,563 | 2,180 | 694 | 92.893 | 10,706 |
| 26 Montana, | 8.022 | 7,946 | 76 | 6 | 1 | 7,830 | 75 |
| 27. Nebraska, | 18 255 | 16.529 | 1,726 | 92 | 13 | 16,047 | 1,694 |
| 28. Nevada, | 13,231 | 12,878 | 353 | 8 | 3 | 12.714 | 344 |
| 29. New Hampshire, | 58.037 | 40.675 | 17,362 | 1 257 | 1,353 | 37,222 | 15.808 |
| 30. New Jersey, | 160,561 | 131,647 | 28,914 | 5,113 | 3,377 | 121,180 | 25,252 |
| 31. New Mexico, | 4,377 | 4,042 | 335 | 18 | 34 | 3.938 | 290 |
| 32. New York, | 629,869 | 492,679 | 137,190 | 13,719 | 10,899 | 457.597 | 124 798 |
| 33. North Carolina, | 33,963 | 28 416 | 5 547 | 1.231 | 779 | 24,898 | 4.563 |
| 34. Ohio, | 242.294 | 210,362 | 31 932 | 6 106 | 1,795 | 193.762 | 29.620 |
| 35. Oregon, | 17,458 | 16,770 | 688 | 95 | 4 | 16,288 | 676 |
| 36. Pennsylvania, | 528.277 | 451,417 | 76,860 | 19,326 | 6 486 | 413,928 | 69 432 |
| 37. Rhode Island, | 66.160 | 46.072 | 20 088 | 2.957 | 2,576 | 41,278 | 17.372 |
| 38. South Carolina, | 19.698 | 15 887 | 3 811 | 425 | 233 | 14,184 | 3 415 |
| 39. Tennessee, | 36 082 | 32,442 | 3,640 | 643 | 196 | 29,885 | 3,343 |
| 40. Texas, | 30,346 | 28,238 | 2,108 | 265 | 34 | 26,927 | 2,041 |
| 41. Utah, | 10,212 | 9,401 | 811 | 158 | 32 | 8.773 | 711 |
| 42. Vermont, | 26,214 | 22 586 | 3.628 | 442 | 166 | 20.565 | 3 361 |
| 43. Virginia, | 63.059 | 54,607 | 8.452 | 1 769 | 577 | 49,136 | 7,634 |
| 44. Washington. | 7.296 | 7.132 | 164 | 38 | 2 | 6,955 | 159 |
| 45. West Virginia, | 26,288 | 24,840 | 1 443 | 527 | 32 | 23,120 | 1,378 |
| 46. Wisconsin, | 86.510 | 75.969 | 10,541 | 1,328 | 425 | 71.275 | 9,978 |
| 47. Wyoming, | 1,689 | 1,615 | 74 | 2 | . . . . | 1,597 | 74 |

*mining industries, by States and Territories, with age, sex, and nativity—1880.*

| AGE AND SEX. | | NATIVITY. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 60 AND OVER. | | United States. | Ireland. | Germany. | Great Britain. | Scandinavia. | British America. | Other countries. | |
| Male. | Female. | | | | | | | | |
| 139,602 | 7,901 | 2,611,325 | 234 175 | 368,110 | 225 730 | 44,615 | 153,935 | 149,222 | |
| 1 462 | 74 | 21 139 | 311 | 418 | 296 | 27 | 38 | 767 | 1 |
| 75 | . . . . | 4.328 | 553 | 429 | 516 | 71 | 211 | 1 266 | 2 |
| 501 | 28 | 10,092 | 201 | 439 | 212 | 46 | 78 | 270 | 3 |
| 3.706 | 75 | 48 084 | 9 669 | 9 337 | 8,869 | 1 561 | 5,199 | 35.563 | 4 |
| 518 | 5 | 31,694 | 3,030 | 2 334 | 5,309 | 1,027 | 2,303 | 1,711 | 5 |
| 4,252 | 227 | 78,465 | 15,940 | 5,097 | 7,469 | 770 | 7,043 | 1,307 | 6 |
| 102 | 1 | 5,417 | 470 | 593 | 726 | 573 | 963 | 359 | 7 |
| 631 | 34 | 12 327 | 858 | 342 | 473 | 19 | 34 | 95 | 8 |
| 523 | 40 | 12,950 | 723 | 1,068 | 339 | 19 | 41 | 192 | 9 |
| 434 | 16 | 6 449 | 79 | 131 | 155 | 42 | 60 | 1,520 | 10 |
| 1,695 | 98 | 34 910 | 401 | 365 | 273 | 31 | 38 | 149 | 11 |
| 106 | . . . | 2,397 | 431 | 267 | 459 | 148 | 195 | 2.635 | 12 |
| 6.151 | 243 | 116 492 | 12.297 | 36,391 | 15 454 | 10 475 | 5,012 | 9 449 | 13 |
| 4 333 | 181 | 89,974 | 2.419 | 11 646 | 3 299 | 391 | 653 | 1.745 | 14 |
| 2,718 | 110 | 50 180 | 2,067 | 8,169 | 3,807 | 2,237 | 1,496 | 1,985 | 15 |
| 1,046 | 45 | 28,560 | 993 | 2.340 | 2,077 | 802 | 727 | 820 | 16 |
| 2,531 | 116 | 50,245 | 2.103 | 6 665 | 1,391 | 26 | 237 | 814 | 17 |
| 1,963 | 146 | 22,826 | 1,245 | 3,200 | 546 | 67 | 144 | 2.653 | 18 |
| 3,443 | 215 | 59 723 | 2.016 | 206 | 2.401 | 159 | 7 826 | 331 | 19 |
| 3,571 | 317 | 67,743 | 2,686 | 11,446 | 2 189 | 50 | 230 | 993 | 20 |
| 13,147 | 826 | 238,255 | 52 358 | 6 144 | 24 649 | 1,958 | 43,191 | 3,710 | 21 |
| 4,268 | 222 | 74,058 | 5,226 | 13 559 | 9,598 | 3 246 | 19,685 | 5,541 | 22 |
| 1.001 | 32 | 20 867 | 1,359 | 5.460 | 1,587 | 5,485 | 3,394 | 1 637 | 23 |
| 761 | 24 | 11,914 | 290 | 363 | 217 | 80 | 56 | 225 | 24 |
| 3,138 | 163 | 74,703 | 5 882 | 19,376 | 4 209 | 582 | 1,300 | 3,722 | 25 |
| 110 | . . . . . . | 3,994 | 855 | 415 | 646 | 191 | 663 | 1 258 | 26 |
| 390 | 19 | 12.712 | 555 | 1,966 | 962 | 649 | 547 | 864 | 27 |
| 156 | 6 | 4 912 | 1,688 | 643 | 2 429 | 172 | 1.091 | 2 296 | 28 |
| 2 196 | 201 | 42.200 | 3,282 | 281 | 1,736 | 67 | 10,328 | 143 | 29 |
| 5,354 | 285 | 109 696 | 14,532 | 18,334 | 12,087 | 507 | 896 | 4 509 | 30 |
| 86 | 11 | 3 219 | 189 | 182 | 154 | 30 | 87 | 516 | 31 |
| 21.363 | 1.493 | 385 693 | 70,487 | 93,118 | 34,024 | 3,448 | 15,834 | 27,265 | 32 |
| 2,287 | 205 | 33,271 | 97 | 102 | 156 | 11 | 23 | 303 | 83 |
| 10 494 | 517 | 172.097 | 8 209 | 35,673 | 15 649 | 376 | 3,145 | 7 145 | 34 |
| 387 | 8 | 8,245 | 622 | 964 | 967 | 656 | 486 | 5,518 | 35 |
| 18,163 | 942 | 388 836 | 43,246 | 42,600 | 40 635 | 2,247 | 2 552 | 8 161 | 36 |
| 1.837 | 140 | 40 278 | 9,108 | 685 | 7,060 | 282 | 8,238 | 509 | 37 |
| 1,278 | 113 | 18,819 | 260 | 332 | 153 | 11 | 19 | 104 | 38 |
| 1,914 | 101 | 33 546 | 642 | 729 | 666 | 80 | 76 | 343 | 39 |
| 1,046 | 33 | 22,460 | 951 | 2,885 | 1,066 | 195 | 311 | 2 478 | 40 |
| 470 | 68 | 4 249 | 126 | 196 | 3,513 | 686 | 540 | 902 | 41 |
| 1 579 | 101 | 19 738 | 1,532 | 113 | 904 | 25 | 3,804 | 98 | 42 |
| 3 702 | 241 | 61,191 | 438 | 631 | 506 | 20 | 57 | 216 | 43 |
| 139 | 3 | 3 796 | 302 | 377 | 575 | 262 | 550 | 1 434 | 44 |
| 1,193 | 38 | 22,861 | 870 | 1,457 | 884 | 7 | 76 | 133 | 45 |
| 3 366 | 138 | 44,879 | 2,454 | 20.535 | 4,152 | 4,760 | 4,388 | 5 342 | 46 |
| 16 | . . . | 841 | 118 | 107 | 286 | 41 | 70 | 226 | 47 |

## OCCUPATIONS.—*The United States by classes and*

| OCCUPATIONS. | Persons occupied. | AGE AND SEX. | | | |
|---|---|---|---|---|---|
| | | ALL AGES. | | 1 TO 15. | |
| | | Male. | Female. | Male. | Female. |
| All occupations, | 17,392,099 | 14,744,942 | 2,647,157 | 825,187 | 293,169 |
| Agriculture, | 7,670,493 | 7,075,983 | 594,510 | 584,867 | 135,862 |
| 1. Agricultural laborers,* | 3,323,876 | 2,788,976 | 534 900 | 580,576 | 135,591 |
| 2. Apiarists, | 1.016 | 999 | 17 | 3 | |
| 3. Dairymen and dairywomen, | 8.948 | 8,238 | 710 | 136 | 54 |
| 4. Farm and plantation overseers, | 3.106 | 2,913 | 193 | 1 | . . . |
| 5. Farmers and planters, | 4,225,945 | 4 169,136 | 56,809 | . . . | . . . . |
| 6. Florists, | 4.550 | 4.320 | 230 | 72 | 10 |
| 7. Gardeners, nurserymen, and vine-growers, | 51,482 | 50,173 | 1,309 | 1,036 | 155 |
| 8. Stock-drovers, | 3,449 | 3,449 | . . . . . . | 110 | . . . |
| 9. Stock-herders, | 24.098 | 24 004 | 94 | 2,755 | 38 |
| 10. Stock-raisers, | 16,528 | 16 406 | 122 | . . . | . . . . |
| 11. Turpentine farmers and laborers, | 7,450 | 7,325 | 125 | 178 | 14 |
| 12. Others in agriculture, | 45 | 44 | 1 | . . | . . |
| Professional and personal services, | 4 074,238 | 2,712,943 | 1,361,295 | 127,565 | 107,830 |
| 13. Actors, | 4.812 | 2 992 | 1,820 | 18 | 45 |
| 14. Architects, | 3,375 | 3,358 | 17 | . . | . . |
| 15. Artists and teachers of art, | 9,104 | 7,043 | 2.061 | 29 | 8 |
| 16. Auctioneers, | 2,331 | 2,328 | 3 | . . . . . | . . . |
| 17. Authors, lecturers, and literary persons, | 1,131 | 811 | 320 | . | 1 |
| 18. Barbers and hairdressers, | 44 851 | 41,949 | 2,902 | 471 | 102 |
| 19. Billiard and bowling-saloon keepers and employees, † | 1,543 | 1.499 | 44 | 10 | . . . . |
| 20. Boarding and lodging-house keepers, | 19,058 | 6,745 | 12,313 | . . . . | . . . |
| 21. Chemists, assayers, and metallurgists, | 1 969 | 1,921 | 48 | 2 | . . . . |
| 22. Clergymen, | 64,698 | 64,533 | 165 | . . | . . . . |
| 23. Clerks and copyists (not otherwise described,) | 25.467 | 23 820 | 1.647 | 744 | 45 |
| 24. Clerks in Government offices, ‡ | 16 849 | 14 873 | 1,976 | 26 | 3 |
| 25. Clerks in hotels and restaurants, | 10,916 | 10,670 | 246 | 109 | 10 |
| 26. Collectors and claim agents, | 4 213 | 4.187 | 26 | 24 | . . . . |
| 27. Dentists, | 12 314 | 12,253 | 61 | . . . | . . . . |
| 28. Designers, draughtsmen, and inventors, | 2,820 | 2.764 | 56 | 7 | 1 |
| 29. Domestic servants, | 1,075.655 | 136.745 | 938,910 | 23 949 | 93,211 |
| 30. Employees of charitable institutions, | 2 396 | 781 | 1,615 | 1 | 10 |
| 31. Employees of Government, ‡ | 31,691 | 28,433 | 3.168 | 179 | 12 |
| 32. Employees of hotels and restaurants, (not clerks,) | 77.413 | 46,348 | 31,065 | 1,189 | 685 |
| 33. Engineers, (civil,) | 8 261 | 8,261 | . . . | 2 | . . . . |
| 34. Hostlers, | 31 697 | 31.697 | . . . | 625 | . . . . |
| 35. Hotel keepers, | 32,453 | 30,317 | 2 136 | . . . . | . . . |
| 36. Hunters, trappers, guides, and scouts, | 1,912 | 1,912 | . . . . | . . . . . . | . . . . |
| 37. Janitors, | 6 763 | 6.064 | 699 | 14 | 2 |
| 38. Journalists, | 12 308 | 12,020 | 288 | | . |
| 39. Laborers, (not specified,)* | 1,859 223 | 1,796,575 | 62,648 | 91,599 | 11,376 |
| 40. Launderers and laundresses, | 121,942 | 13,744 | 108,198 | 180 | 1,062 |
| 41. Lawyers, | 64,137 | 64,062 | 75 | . . | . . . . |
| 42. Livery stable keepers, | 14,213 | 14,180 | 33 | . | . . |
| 43. Messengers, | 13 985 | 13 585 | 400 | 8,064 | 351 |
| 44. Midwives, | 2,118 | . | 2,118 | | . . |
| 45. Musicians (professional) and teachers of music, | 30,477 | 17,295 | 13,182 | 111 | 79 |
| 46. Nurses, | 13.483 | 1.189 | 12,294 | 26 | 315 |
| 47. Officers of the army and navy, (United States,) | 2,600 | 2,600 | . . | . . . . . | . . . . |
| 48. Officials of Government, ‡ | 67.081 | 64 909 | 2,172 | . . . . . | . . . |
| 49. Physicians and surgeons, | 85.671 | 83,239 | 2,432 | . . . . . | . . . . |
| 50. Restaurant keepers, | 13,074 | 12,228 | 846 | . . . . . | . . . . |

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*In agricultural districts many enumerators have reported "agricultural laborers" simply as "laborers."

†To a great extent confused with "hotel," "restaurant," and "saloon" keepers.

‡Including national, state, county, city, and town governments.

*severally, with the age, sex, and nativity of persons occupied, 1880.*

| AGE AND SEX. | | | | NATIVITY. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 to 59. | | 60 and over. | | United States. | Ireland. | Germany. | Great Britain. | Scandinavia. | British America. | Other countries. | |
| Male. | Female. | Male. | Female. | | | | | | | | |
| 12.986,111 | 2,283 115 | 933 644 | 70.873 | 13,897,452 | 978 854 | 1,033 190 | 466 505 | 205 525 | 351,103 | 459.470 | |
| 5,888,133 | 435,920 | 602,983 | 22,728 | 6,857,664 | 140,307 | 293,722 | 104 314 | 91,836 | 73 435 | 109,215 | |
| 2,126 811 | 386,664 | 81,589 | 12,645 | 3,162,474 | 24,236 | 48,210 | 15,216 | 22,624 | 21,214 | 29,902 | 1 |
| 904 | 17 | 92 | . . . | 891 | 10 | 37 | 42 | 2 | 28 | 6 | 2 |
| 7,816 | 622 | 686 | 34 | 5.053 | 575 | 1.469 | 258 | 87 | 301 | 1,205 | 3 |
| 2.736 | 152 | 176 | 41 | 2 780 | 95 | 73 | 51 | 7 | 26 | 74 | 4 |
| 3,657,557 | 47,042 | 511 579 | 9,767 | 3,615,765 | 107,708 | 233 390 | 82.867 | 68,431 | 50,635 | 67,149 | 5 |
| 4,063 | 203 | 185 | 17 | 2.512 | 337 | 753 | 595 | 26 | 69 | 258 | 6 |
| 41,317 | 954 | 7,820 | 200 | 26,887 | 6,298 | 8,588 | 3 888 | 359 | 537 | 4,925 | 7 |
| 3.220 | . . . | 119 | . . | 2 923 | 149 | 150 | 71 | 7 | 67 | 82 | 8 |
| 20,717 | 52 | 532 | 4 | 18,245 | 440 | 624 | 704 | 245 | 289 | 3 551 | 9 |
| 15.877 | 102 | 529 | 20 | 12,662 | 453 | 424 | 620 | 48 | 268 | 2,053 | 10 |
| 7,074 | 111 | 73 | . . . . | 7,430 | 5 | 4 | 1 | . . | | 10 | 11 |
| 41 | 1 | 3 | | 42 | 1 | . . | 1 | | 1 | | 12 |
| 2,446,962 | 1,215 189 | 138 416 | 38 276 | 3,076,768 | 415,854 | 218,867 | 79,963 | 52,860 | 90,614 | 139,312 | |
| 2.939 | 1,764 | 35 | 11 | 3,531 | 169 | 219 | 445 | 17 | 116 | 315 | 13 |
| 3 204 | 17 | 154 | . . . | 2,382 | 92 | 395 | 255 | 27 | 90 | 134 | 14 |
| 6,677 | 2.022 | 337 | 31 | 6,727 | 143 | 902 | 541 | 51 | 187 | 553 | 15 |
| 2 113 | 3 | 215 | . . . | 1,983 | 73 | 91 | 101 | 5 | 34 | 44 | 16 |
| 703 | 303 | 108 | 16 | 921 | 21 | 32 | 83 | 5 | 19 | 50 | 17 |
| 41 634 | 2,772 | 444 | 28 | 31,945 | 488 | 7,814 | 690 | 118 | 1,050 | 2,746 | 18 |
| 1,452 | 42 | 37 | 2 | 1,232 | 63 | 111 | 45 | 10 | 41 | 41 | 19 |
| 5,689 | 11,175 | 1,056 | 1,138 | 12 294 | 2 439 | 1,549 | 934 | 278 | 784 | 780 | 20 |
| 1,824 | 47 | 95 | 1 | 1,303 | 76 | 225 | 171 | 12 | 32 | 150 | 21 |
| 55,639 | 140 | 8 894 | 25 | 51,967 | 2,516 | 4.301 | 2.589 | 598 | 930 | 1,797 | 22 |
| 22,804 | 1,595 | 272 | 7 | 22 742 | 545 | 632 | 760 | 76 | 341 | 371 | 23 |
| 14,283 | 1.958 | 564 | 15 | 15,299 | 439 | 450 | 344 | 40 | 127 | 150 | 24 |
| 10,446 | 332 | 124 | 4 | 9,398 | 296 | 449 | 256 | 62 | 252 | 203 | 25 |
| 3,832 | 25 | 331 | 1 | 3 271 | 267 | 324 | 186 | 13 | 45 | 107 | 26 |
| 11.821 | 59 | 432 | 2 | 11.459 | 68 | 204 | 193 | 14 | 237 | 139 | 27 |
| 2,637 | 54 | 120 | 1 | 2.003 | 43 | 217 | 314 | 30 | 53 | 160 | 28 |
| 108 552 | 821.341 | 4,244 | 24 358 | 819,651 | 122,194 | 43,444 | 19 477 | 19,077 | 22 050 | 29,762 | 29 |
| 741 | 1,519 | 39 | 86 | 1,462 | 470 | 190 | 112 | 6 | 64 | 92 | 30 |
| 26 763 | 3,089 | 1,491 | 67 | 25,604 | 2.659 | 1.242 | 1,053 | 147 | 480 | 416 | 31 |
| 44 542 | 30,133 | 617 | 247 | 52 652 | 11.107 | 4 707 | 1,830 | 970 | 2.126 | 4,021 | 32 |
| 7,708 | . . . | 551 | . . . | 7 097 | 170 | 296 | 357 | 53 | 120 | 168 | 33 |
| 30.344 | . . | 728 | . . . . . | 23 488 | 4,230 | 1,820 | 787 | 199 | 695 | 478 | 34 |
| 27,670 | 1,948 | 2,647 | 188 | 22,592 | 2,609 | 4,006 | 1,243 | 228 | 853 | 922 | 35 |
| 1.769 | . . . | 143 | . . . | 1,583 | 13 | 28 | 33 | 13 | 81 | 161 | 36 |
| 5 507 | 629 | 543 | 68 | 4,214 | 1,171 | 565 | 441 | 71 | 99 | 202 | 37 |
| 11,700 | 284 | 320 | 4 | 10,426 | 324 | 541 | 535 | 43 | 188 | 251 | 38 |
| 1,616.504 | 48,687 | 88,472 | 2,585 | 1,336.845 | 225.122 | 114,641 | 31,383 | 28 031 | 50,342 | 72,859 | 39 |
| 13,112 | 102,342 | 452 | 4,794 | 87,815 | 14,788 | 4,870 | 1,625 | 658 | 999 | 11,187 | 40 |
| 60.177 | 64 | 3,885 | 11 | 60.342 | 1,008 | 791 | 948 | 89 | 559 | 400 | 41 |
| 13 632 | 31 | 548 | 2 | 12,055 | 866 | 462 | 346 | 51 | 306 | 127 | 42 |
| 5,453 | 47 | 68 | 2 | 12.739 | 305 | 253 | 311 | 49 | 146 | 182 | 43 |
| . . | 1.253 | . . . | 865 | 1,234 | 52 | 560 | 69 | 20 | 11 | 172 | 44 |
| 16,452 | 12,998 | 732 | 105 | 21,595 | 536 | 4 163 | 1,221 | 125 | 475 | 2,362 | 45 |
| 1.061 | 9,485 | 102 | 2,494 | 9.397 | 1,595 | 855 | 881 | 89 | 379 | 287 | 46 |
| 2 491 | . . | 109 | . . | 2,238 | 135 | 76 | 62 | 12 | 17 | 60 | 47 |
| 59 649 | 2 088 | 5,260 | 84 | 55,772 | 5.133 | 2,677 | 1,696 | 274 | 745 | 784 | 48 |
| 75,006 | 2 268 | 8,233 | 164 | 77 092 | 1,021 | 2 640 | 1,748 | 176 | 1,520 | 1.474 | 49 |
| 11,707 | 817 | 521 | 29 | 7,764 | 791 | 2,488 | 575 | 120 | 302 | 1,034 | 50 |

## OCCUPATIONS—

| OCCUPATIONS. | Persons occupied. | AGE AND SEX. | | | |
|---|---|---|---|---|---|
| | | ALL AGES. | | 10 TO 15. | |
| | | Male. | Female. | Male. | Female. |
| Professional and personal services—*Continued.* | | | | | |
| 51. Sextons, | 2 449 | 2 435 | 14 | 5 | . . . |
| 52. Showmen and employees of shows, | 2,604 | 2,421 | 183 | 17 | 7 |
| 53. Soldiers, sailors, and marines, (U. S. army and navy,)* | 24 161 | 24 161 | . | 20 | . |
| 54. Teachers and scientific persons, | 227,710 | 73 335 | 154,375 | 92 | 505 |
| 55. Veterinary surgeons, | 2 130 | 2 130 | . . | . . | . . |
| 56. Watchmen (private) and detectives, | 13,384 | 13,370 | 14 | 13 | . . . |
| 57. Whitewashers, | 3 316 | 3,301 | 15 | 10 | . . . |
| 58. Others in professional and personal services, | 4,570 | 3 860 | 710 | 38 | . |
| Trade and transportation, | 1,810,256 | 1,750 892 | 59,364 | 26 078 | 2 547 |
| 59 Agents, (not specified,) | 18 523 | 18 152 | 371 | 79 | 21 |
| 60 Bankers and brokers of money and stocks, | 15,130 | 15,112 | 68 | . | . . |
| 61. Boatmen and watermen, | 20,368 | 20,357 | 11 | 470 | |
| 62. Book-keepers and accountants in stores, | 59 790 | 57,425 | 2 365 | 147 | 29 |
| 63. Brokers, (commercial,) | 4,193 | 4,128 | 65 | . . | . |
| 64. Canalmen, | 4 329 | 4,281 | 48 | 130 | 2 |
| 65. Clerks in stores, | 353,444 | 329 722 | 23,722 | 14,596 | 1 541 |
| 66. Clerks and book-keepers in banks, | 10,257 | 10 183 | 74 | 72 | 2 |
| 67. Clerks and book-keepers in express companies, | 1 856 | 1,843 | 8 | 7 | |
| 68. Clerks and book-keepers in insurance offices, | 2,830 | 2 777 | 53 | 29 | 1 |
| 69. Clerks and book-keepers in railroad offices, | 12 331 | 12 274 | 57 | 71 | 3 |
| 70. Commercial travelers, | 28,158 | 27,886 | 272 | 22 | 1 |
| 71. Draymen, hackmen, teamsters, etc., | 177,586 | 177,586 | | 1 961 | . . |
| 72. Employees in warehouses, | 5,022 | 4,816 | 206 | 109 | 35 |
| 73. Employees of banks, (not clerks,) | 1,070 | 1 049 | 21 | 34 | . . |
| 74. Employees of insurance companies, (not clerks,) | 13,146 | 13 041 | 105 | 33 | 1 |
| 75. Employees of railroad companies, (not clerks,) | 236,058 | 235,611 | 447 | 875 | 27 |
| 76. Hucksters and peddlers, | 53,491 | 50 999 | 2,492 | 897 | 72 |
| 77. Milkmen and milkwomen, | 9 242 | 8,916 | 326 | 122 | 11 |
| 78. Newspaper criers and carriers, | 3 374 | 3,298 | 76 | 941 | 5 |
| 79. Officials and employees of express companies, (not clerks,) | 13,004 | 12 993 | 11 | 153 | 2 |
| 80. Officials and employees of street railroad companies, | 11,925 | 11,921 | 4 | 31 | . . . |
| 81. Officials and employees of telegraph companies, | 22,809 | 21,678 | 1 131 | 1,450 | 48 |
| 82. Officials and employees of telephone companies, | 1,197 | 1 050 | 147 | 95 | 3 |
| 83 Officials and employees of trading and transportation companies, (not specified,) | 9,702 | 9,686 | 16 | 25 | . . |
| 84. Officials of banks, | 4 421 | 4,421 | . | . | . . |
| 85. Officials of insurance companies, | 1,774 | 1,774 | . . . | . . . | . . |
| 86. Officials of railroad companies, | 2,069 | 2 069 | . . | . . . . | |
| 87. Packers, | 4,176 | 3 650 | 526 | 97 | 55 |
| 88. Pilots, | 3,770 | 3 770 | | 1 | |
| 89. Porters and laborers in stores and warehouses, | 32,192 | 29 938 | 2 254 | 2,762 | 397 |
| 90. Sailors,* | 60,070 | 60,070 | | 350 | . . |
| 91. Salesmen and saleswomen, | 32 279 | 24,535 | 7,744 | 133 | 282 |
| 92. Saloon-keepers and bar-tenders, | 68,461 | 67 153 | 1,308 | 262 | 2 |
| 93. Shippers and freighters, | 5,166 | 5 160 | 6 | 10 | |
| 94. Steamboat men and women, | 12 365 | 12 182 | 183 | 84 | 5 |
| 95. Stewards and stewardesses, | 2,283 | 1,935 | 298 | 6 | . . |
| 96. Toll-gate and bridge-keepers, | 2 303 | 1 885 | 418 | 9 | 1 |
| 97. Traders and dealers, (not specified,) | 112,840 | 109 094 | 3,746 | . | . . . |
| 98. Traders and dealers in agricultural implements, | 1,999 | 1,997 | 2 | . . | . . |
| 99. Traders and dealers in books and stationery, | 4,982 | 4,783 | 199 | . . . . | . . |
| 100. Traders and dealers in boots and shoes, | 9,993 | 9,807 | 186 | . . . . | . . . |
| 101. Traders and dealers in cabinet ware, | 7,419 | 7,335 | 84 | . . . . | . . . |
| 102. Traders and dealers in cigars and tobacco, | 11,866 | 11,332 | 534 | . . . . | . . . |
| 103. Traders and dealers in clothing and men's furnishing goods, | 10,073 | 9 874 | 199 | . . . . | . . . |
| 104. Traders and dealers in coal and wood, | 10 871 | 10,781 | 90 | . . . . | . . |
| 105. Traders and dealers in cotton and wool, | 2,494 | 2 484 | 10 | . . . | . . |

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*In a census of the United States "sailors" at sea, when the enumeration is taken, are liable to be omitted unless they are actual members of families which are enumerated.

**Continued.**

| AGE AND SEX. | | | | NATIVITY. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 TO 59. | | 60 AND OVER. | | United States. | Ireland. | Germany. | Great Britain. | Scandinavia. | British America. | Other countries | |
| Male. | Female. | Male. | Female. | | | | | | | | |
| 1. 968 | 11 | 462 | 3 | 1. 453 | 360 | 253 | 237 | 21 | 36 | 89 | 51 |
| 2. 360 | 173 | 44 | 3 | 2 043 | 80 | 135 | 147 | 3 | 65 | 131 | 52 |
| 23, 577 | | 564 | . | 14. 944 | 3, 716 | 2 727 | 1 213 | 209 | 507 | 845 | 53 |
| 71 068 | 153, 071 | 2, 175 | 799 | 211, 671 | 3 916 | 4 328 | 2. 319 | 534 | 2, 617 | 2 325 | 54 |
| 1 840 | | 290 | . . . | 1, 457 | 104 | 156 | 252 | 18 | 71 | 72 | 55 |
| 12 098 | 12 | 1, 259 | 2 | 6, 936 | 3, 293 | 1, 389 | 866 | 174 | 286 | 440 | 56 |
| 2, 955 | 14 | 336 | 1 | 2 714 | 72 | 339 | 67 | 13 | 41 | 70 | 57 |
| 3, 459 | 677 | 363 | 33 | 3, 436 | 276 | 310 | 222 | 31 | 96 | 199 | 58 |
| 1 672, 171 | 54 849 | 52, 643 | 1, 968 | 1, 351, 695 | 138, 518 | 152, 491 | 56 498 | 16, 214 | 33, 119 | 61, 721 | |
| 17. 337 | 331 | 736 | 19 | 15 261 | 667 | 1 021 | 819 | 100 | 314 | 341 | 59 |
| 13 824 | 57 | 1, 288 | 11 | 12, 944 | 339 | 929 | 486 | 27 | 176 | 379 | 60 |
| 19, 383 | 9 | 504 | 2 | 16. 896 | 1, 638 | 550 | 327 | 262 | 425 | 270 | 61 |
| 56, 163 | 2 326 | 1, 115 | 10 | 49 675 | 1. 672 | 3, 240 | 2. 693 | 241 | 1, 041 | 1, 228 | 62 |
| 3, 687 | 51 | 441 | 14 | 3 004 | 207 | 378 | 239 | 26 | 63 | 276 | 63 |
| 4, 025 | 45 | 126 | 1 | 3 742 | 320 | 94 | 58 | 10 | 65 | 40 | 64 |
| 312, 342 | 22, 105 | 2, 784 | 76 | 303, 670 | 10, 480 | 17, 330 | 8 310 | 2 155 | 5, 567 | 5, 932 | 65 |
| 9, 982 | 71 | 129 | 1 | 9, 498 | 117 | 230 | 222 | 21 | 95 | 74 | 66 |
| 1, 816 | 8 | 25 | . . | 1. 632 | 75 | 38 | 56 | 4 | 31 | 20 | 67 |
| 2, 702 | 52 | 46 | . | 2 603 | 43 | 59 | 80 | 2 | 18 | 25 | 68 |
| 12 082 | 52 | 121 | 2 | 10, 887 | 469 | 153 | 476 | 30 | 223 | 93 | 69 |
| 27, 260 | 256 | 604 | 15 | 23, 596 | 839 | 1, 596 | 1, 014 | 86 | 536 | 491 | 70 |
| 170 971 | . . | 4. 654 | . . . . | 128, 275 | 22 911 | 13 012 | 4, 470 | 1, 020 | 4, 484 | 3 414 | 71 |
| 4 539 | 166 | 168 | 5 | 3, 516 | 523 | 350 | 190 | 48 | 69 | 326 | 72 |
| 936 | 20 | 79 | 1 | 900 | 75 | 39 | 37 | 4 | 4 | 11 | 73 |
| 12, 101 | 102 | 907 | 2 | 11. 271 | 262 | 815 | 405 | 40 | 171 | 182 | 74 |
| 231, 503 | 413 | 3. 233 | 7 | 169, 380 | 32, 407 | 9 748 | 6, 565 | 4, 548 | 5 307 | 8, 103 | 75 |
| 47, 279 | 2, 009 | 2, 823 | 411 | 30, 682 | 5, 156 | 7. 173 | 1, 657 | 183 | 726 | 7 914 | 76 |
| 8, 481 | 283 | 313 | 32 | 5, 496 | 1 078 | 1. 843 | 236 | 58 | 124 | 407 | 77 |
| 2 253 | 69 | 104 | 2 | 2 524 | 124 | 460 | 121 | 10 | 45 | 90 | 78 |
| 12. 513 | 9 | 327 | . . | 10, 133 | 1, 128 | 851 | 403 | 74 | 201 | 214 | 79 |
| 11, 769 | 4 | 121 | . . | 8, 229 | 2, 217 | 711 | 328 | 58 | 257 | 125 | 80 |
| 20, 173 | 1, 082 | 55 | 1 | 20. 738 | 550 | 249 | 484 | 76 | 588 | 124 | 81 |
| 953 | 144 | 2 | . . . | 1. 092 | 29 | 1 | 26 | 1 | 39 | 9 | 82 |
| 9. 349 | 16 | 312 | . . . | 4, 789 | 2, 871 | 577 | 448 | 242 | 265 | 510 | 83 |
| 3 938 | . . . | 483 | . . . | 4. 116 | 38 | 108 | 90 | 6 | 36 | 27 | 84 |
| 1 600 | . . . . | 174 | . . | 1. 546 | 40 | 80 | 62 | 4 | 21 | 21 | 85 |
| 1. 963 | . . . | 106 | . . | 1 855 | 55 | 31 | 79 | 2 | 40 | 7 | 86 |
| 3. 482 | 467 | 71 | 4 | 2 491 | 624 | 482 | 176 | 36 | 99 | 268 | 87 |
| 3, 520 | | 249 | . . . | 3 324 | 123 | 75 | 115 | 27 | 51 | 55 | 88 |
| 26, 583 | 1 829 | 593 | 28 | 21 401 | 3, 633 | 3. 880 | 805 | 395 | 510 | 1. 568 | 89 |
| 58, 028 | | 1, 692 | . | 41, 984 | 3, 659 | 2, 292 | 3, 239 | 2, 897 | 2 001 | 3 998 | 90 |
| 24 023 | 7 439 | 379 | 23 | 26 370 | 1, 626 | 2, 054 | 1. 177 | 61 | 450 | 541 | 91 |
| 65, 486 | 1, 237 | 1, 405 | 69 | 30, 261 | 8, 450 | 20, 667 | 2, 296 | 737 | 1, 584 | 4, 466 | 92 |
| 5, 015 | 6 | 135 | . . | 4. 078 | 214 | 159 | 253 | 46 | 112 | 304 | 93 |
| 11, 812 | 172 | 286 | 6 | 10 219 | 697 | 349 | 414 | 132 | 279 | 275 | 94 |
| 1 916 | 283 | 63 | 15 | 1, 535 | 190 | 128 | 178 | 15 | 57 | 180 | 95 |
| 1, 469 | 379 | 407 | 38 | 1 852 | 202 | 122 | 71 | 6 | 24 | 26 | 96 |
| 102, 866 | 3, 410 | 6, 228 | 336 | 86. 791 | 4. 136 | 11, 085 | 3, 527 | 657 | 1, 420 | 5, 224 | 97 |
| 1, 945 | 2 | 52 | . . | 1, 737 | 31 | 84 | 54 | 21 | 50 | 22 | 98 |
| 4 531 | 189 | 252 | 10 | 3, 826 | 263 | 407 | 291 | 19 | 56 | 120 | 99 |
| 9. 246 | 173 | 561 | 13 | 6 454 | 724 | 1, 760 | 442 | 62 | 172 | 379 | 100 |
| 6, 942 | 80 | 393 | 4 | 5 032 | 359 | 1 133 | 380 | 77 | 136 | 302 | 101 |
| 10 865 | 513 | 467 | 21 | 7. 412 | 469 | 2, 604 | 413 | 37 | 106 | 825 | 102 |
| 9, 481 | 178 | 393 | 21 | 5, 112 | 336 | 3, 127 | 347 | 52 | 124 | 975 | 103 |
| 10. 057 | 86 | 724 | 4 | 8 058 | 903 | 956 | 449 | 51 | 175 | 279 | 104 |
| 2, 318 | 10 | 166 | . . . | 2, 023 | 112 | 146 | 138 | 4 | 13 | 58 | 105 |

## OCCUPATIONS—

| OCCUPATIONS. | Persons occupied. | AGE AND SEX. | | | |
|---|---|---|---|---|---|
| | | ALL AGES. | | 10 TO 15. | |
| | | Male. | Female. | Male. | Female. |
| Trade and transportation—*Continued.* | | | | | |
| 106. Traders and dealers in crockery, china, glass, and stone ware, | 2,373 | 2.249 | 124 | . . . | . . . |
| 107. Traders and dealers in drugs and medicines, | 27,700 | 27,580 | 120 | . . . . | . . . |
| 108. Traders and dealers in dry goods. fancy goods, and notions, | 45.831 | 41 771 | 4,060 | . . . . | . . . |
| 109. Traders and dealers in gold and silver ware and jewelry, | 2,305 | 2 264 | 41 | . . . . | . . . |
| 110. Traders and dealers in groceries, | 101,849 | 98,055 | 3,794 | . . . . | . . . |
| 111. Traders and dealers in hats, caps, and furs, | 4,809 | 4,722 | 87 | . . . . | . . . |
| 112. Traders and dealers in ice, | 2,854 | 2 842 | 12 | . . . . | . . . |
| 113. Traders and dealers in iron, tin, and copper ware, | 15 076 | 15,014 | 62 | . . . . | . . . |
| 114. Traders and dealers in junk, | 3 574 | 3 503 | 71 | . . . | . . . |
| 115. Traders and dealers in leather, hides, and skins, | 2,382 | 2,380 | 2 | . . . | . . . |
| 116. Traders and dealers in liquors and wines, | 13.500 | 13 368 | 132 | . . . | . . . |
| 117. Traders and dealers in live stock, | 12 596 | 12 582 | 14 | . . . . | . . . |
| 118. Traders and dealers in lumber, | 11 263 | 11 255 | 8 | . . . . | . . . |
| 119. Traders and dealars in marble, stone, and slate, | 1.405 | 1 398 | 7 | . . . . | . . |
| 120. Traders and dealers in music and musical instruments, | 1,906 | 1,861 | 45 | . . . | . . . |
| 121. Traders and dealers in newspapers and periodicals, | 2.729 | 2 622 | 107 | . . . . | . . . |
| 122. Traders and dealers in oils, paints, and turpentine, | 1,940 | 1,926 | 14 | . . . . | . . . |
| 123. Traders and dealers in paper and paper stock, | 1,862 | 1,815 | 47 | . . . . | . . . |
| 124. Traders and dealers in produce and provisions, | 35.129 | 34,599 | 530 | . . . . | . . . |
| 125. Traders and dealers in real estate, | 11,253 | 11.214 | 39 | . . . . | . . . |
| 126. Traders and dealers in sewing-machines, | 6,577 | 6,478 | 99 | . . | . . . |
| 127. Undertakers, | 5 113 | 5.058 | 55 | 4 | 1 |
| 128. Weighers, gaugers, and measurers, | 3.302 | 3 291 | 11 | 8 | . |
| 129. Others in trade and transportation, | 177 | 177 | | 3 | |
| Manufacturing, mechanical, and mining industries, | 3,837,112 | 3 205,124 | 631,988 | 86,677 | 46,930 |
| 130. Agricultural implement-makers,* | 4,891 | 4,879 | 12 | 103 | 1 |
| 131. Artificial-flower-makers, | 3 399 | 512 | 2.887 | 40 | 729 |
| 132. Apprentice to trades,† | 44 170 | 40,313 | 3,857 | 7,261 | 1.239 |
| 133. Bag makers, | 1,408 | 669 | 739 | 84 | 110 |
| 134. Bakers, | 41,309 | 40,246 | 1,063 | 605 | 47 |
| 135. Basket-makers, | 5,654 | 5,058 | 596 | 235 | 33 |
| 136. Blacksmiths, | 172.726 | 172.726 | . . | 556 | . . |
| 137. Bleachers, dyers, and scourers, | 8 222 | 7.573 | 649 | 201 | 32 |
| 138. Blind, door, and sash-makers, | 4,946 | 4.946 | . . . | 144 | . . |
| 139. Boat-makers, | 2.063 | 2,063 | . . | 15 | . |
| 140. Bone and ivory-workers, | 1,888 | 1,717 | 171 | 41 | 9 |
| 141. Book-binders and finishers, | 13.833 | 8,342 | 5 491 | 355 | 405 |
| 142. Boot and shoe-makers, | 194,079 | 173 072 | 21,007 | 2,476 | 1,177 |
| 143. Bottlers and mineral-water-makers, | 2 081 | 2,012 | 69 | 103 | 7 |
| 144. Box-factory operatives, | 15.762 | 8.632 | 7.130 | 708 | 1,022 |
| 145. Brass-founders and workers, | 11,568 | 10,831 | 737 | 396 | 91 |
| 146. Brewers and malsters, | 16,278 | 16 217 | 61 | 128 | 1 |
| 147. Brick and tile makers,‡ | 36.052 | 35.984 | 68 | 1,601 | 6 |
| 148. Bridge-builders and contractors,§ | 2 587 | 2.587 | . | 5 | . . |
| 149. Britannia and japanned ware-makers, | 1,375 | 1.261 | 114 | 32 | 8 |
| 150. Broom and brush-makers, | 8,479 | 7 837 | 642 | 464 | 124 |
| 151. Builders and contractors,§ | 10,804 | 10,793 | 11 | 6 | . . . |
| 152. Butchers, | 76 241 | 76.241 | | 568 | . |
| 153. Button-factory operatives, | 4,872 | 2 480 | 2,392 | 334 | 321 |
| 154. Cabinet-makers, | 50.654 | 50,174 | 480 | 1,525 | 90 |
| 155. Candle, soap, and tallow-makers, | 2,923 | 2,718 | 205 | 166 | 34 |

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*Generally reported as "iron-founders," "carpenters," "machinists," "painters and varnishers," etc.

†In 1870, "apprentices" were, as far as possible, included in the account of their respective trades. Only those whose avocations could not be separately determined were reported under the title "apprentices, (not specified.)"

‡The unskilled workmen employed in brick-yards are generally reported as common "laborers."

§See "builders and contractors, (not specified,)" and "railroad builders and contractors."

**Continued.**

| Age and Sex. | | | | Nativity. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 to 59 | | 60 and over. | | | | | | | | | |
| Male. | Female. | Male. | Female. | United States. | Ireland. | Germany. | Great Britain. | Scandinavia. | British America. | Other countries. | |
| 2 091 | 112 | 158 | 12 | 1, 321 | 169 | 483 | 193 | 10 | 25 | 172 | 106 |
| 26, 784 | 114 | 796 | 6 | 23, 521 | 330 | 1. 842 | 791 | 160 | 443 | 613 | 107 |
| 39, 693 | 3, 741 | 2, 078 | 319 | 33, 101 | 2, 299 | 6, 058 | 1, 704 | 210 | 528 | 1, 931 | 108 |
| 2, 143 | 40 | 121 | 1 | 1, 286 | 54 | 550 | 162 | 13 | 23 | 217 | 109 |
| 92, 256 | 3, 502 | 5, 799 | 292 | 64 331 | 11, 668 | 17, 212 | 3, 292 | 520 | 1, 379 | 3, 447 | 110 |
| 4, 399 | 82 | 323 | 5 | 2, 974 | 374 | 900 | 251 | 19 | 65 | 226 | 111 |
| 2, 743 | 11 | 99 | 1 | 2, 112 | 213 | 269 | 93 | 30 | 65 | 72 | 112 |
| 14, 261 | 59 | 753 | 3 | 12, 177 | 441 | 1, 274 | 593 | 79 | 235 | 277 | 113 |
| 3, 287 | 63 | 216 | 8 | 1, 367 | 1, 267 | 395 | 202 | 11 | 59 | 273 | 114 |
| 2, 196 | 1 | 184 | 1 | 1, 609 | 111 | 460 | 74 | 8 | 18 | 102 | 115 |
| 13, 013 | 120 | 355 | 12 | 4, 945 | 3, 642 | 3 283 | 449 | 63 | 186 | 932 | 116 |
| 12, 063 | 12 | 514 | 2 | 10, 542 | 544 | 722 | 392 | 27 | 192 | 177 | 117 |
| 10 573 | 7 | 682 | 1 | 9, 808 | 198 | 439 | 327 | 58 | 310 | 123 | 118 |
| 1, 307 | 7 | 91 | . . . . | 1, 057 | 123 | 57 | 111 | 4 | 28 | 25 | 119 |
| 1, 766 | 44 | 95 | 1 | 1, 512 | 20 | 199 | 95 | 11 | 31 | 38 | 120 |
| 2, 481 | 100 | 141 | 7 | 2, 007 | 202 | 243 | 176 | 5 | 30 | 66 | 121 |
| 1, 810 | 13 | 116 | 1 | 1, 478 | 84 | 176 | 117 | 8 | 16 | 61 | 122 |
| 1. 667 | 45 | 148 | 2 | 943 | 238 | 385 | 110 | 4 | 6 | 176 | 123 |
| 32, 940 | 454 | 1, 659 | 76 | 26, 197 | 2, 075 | 3, 029 | 1, 279 | 147 | 569 | 1, 833 | 124 |
| 9, 987 | 36 | 1, 227 | 3 | 9, 210 | 553 | 610 | 434 | 48 | 191 | 207 | 125 |
| 6, 350 | 97 | 128 | 2 | 5, 619 | 138 | 287 | 212 | 65 | 175 | 81 | 126 |
| 4, 581 | 45 | 473 | 9 | 4, 056 | 360 | 401 | 135 | 16 | 69 | 76 | 127 |
| 3, 097 | 11 | 186 | . . . . . | 2, 504 | 322 | 133 | 151 | 26 | 117 | 49 | 128 |
| 169 | . | 5 | . . . | 108 | 12 | 8 | 9 | 2 | 9 | 29 | 129 |
| 2, 978, 845 | 577, 157 | 139, 602 | 7, 901 | 2, 611, 325 | 284, 175 | 368, 110 | 225, 730 | 44, 615 | 153, 935 | 149, 222 | |
| 4, 626 | 11 | 150 | . . . . | 3, 255 | 227 | 551 | 141 | 446 | 109 | 162 | 130 |
| 456 | 2. 148 | 16 | 10 | 2, 530 | 176 | 226 | 71 | 5 | 20 | 371 | 131 |
| 33, 052 | 2, 618 | . . . | . . | 40, 088 | 594 | 1, 310 | 736 | 163 | 549 | 730 | 132 |
| 576 | 621 | 9 | 8 | 996 | 151 | 149 | 58 | 1 | 13 | 40 | 133 |
| 38, 554 | 965 | 1, 087 | 51 | 18, 108 | 2, 675 | 15, 238 | 1, 821 | 286 | 971 | 2, 210 | 134 |
| 4, 048 | 525 | 775 | 38 | 3, 689 | 231 | 1, 070 | 202 | 73 | 186 | 203 | 135 |
| 161. 633 | . . | 10, 527 | . . . | 125, 596 | 12 742 | 15, 129 | 7, 508 | 2, 254 | 6 096 | 3, 401 | 136 |
| 7, 028 | 599 | 344 | 18 | 4, 154 | 1, 226 | 985 | 1, 171 | 72 | 156 | 458 | 137 |
| 4 658 | . . . | 144 | . . . | 3, 885 | 120 | 475 | 121 | 68 | 171 | 106 | 138 |
| 1, 846 | . . . | 202 | . . . . | 1, 685 | 113 | 77 | 89 | 12 | 67 | 20 | 139 |
| 1, 558 | 160 | 118 | 2 | 1, 258 | 265 | 206 | 93 | 4 | 20 | 42 | 140 |
| 7. 695 | 5, 065 | 292 | 21 | 10, 770 | 773 | 1 073 | 640 | 97 | 216 | 264 | 141 |
| 156, 579 | 19, 755 | 14, 017 | 75 | 124, 691 | 17, 438 | 27 815 | 6, 701 | 2, 513 | 7, 581 | 7, 340 | 142 |
| 1. 861 | 62 | 48 | . . . | 1, 182 | 171 | 513 | 58 | 19 | 25 | 113 | 143 |
| 7, 738 | 6, 095 | 186 | 13 | 12 893 | 651 | 1, 325 | 306 | 38 | 307 | 242 | 144 |
| 10, 224 | 641 | 211 | 5 | 7, 111 | 2, 015 | 1, 015 | 843 | 88 | 278 | 218 | 145 |
| 15, 770 | 57 | 319 | 3 | 4 057 | 752 | 9, 925 | 358 | 63 | 178 | 945 | 146 |
| 33, 719 | 61 | 664 | 1 | 24, 577 | 2, 327 | 3, 122 | 888 | 464 | 3. 447 | 1, 227 | 147 |
| 2, 508 | . . | 74 | . . . . . . | 1, 922 | 253 | 89 | 112 | 45 | 129 | 37 | 148 |
| 1, 192 | 106 | 37 | . . | 899 | 153 | 100 | 174 | 1 | 17 | 31 | 149 |
| 7, 027 | 509 | 346 | 9 | 6 258 | 381 | 979 | 282 | 54 | 276 | 249 | 150 |
| 9, 951 | 11 | 836 | . . . . | 7, 250 | 1, 665 | 612 | 740 | 53 | 333 | 151 | 151 |
| 73, 701 | . . . | 1, 972 | . . . | 47, 011 | 3, 484 | 18, 166 | 3, 119 | 289 | 1, 124 | 3, 048 | 152 |
| 2, 096 | 2, 065 | 50 | 6 | 3. 793 | 448 | 177 | 261 | 8 | 136 | 49 | 153 |
| 45. 521 | 374 | 3, 128 | 16 | 29, 498 | 1, 132 | 13, 328 | 1, 461 | 1, 267 | 1, 420 | 2, 548 | 154 |
| 2, 433 | 167 | 119 | 4 | 1, 676 | 379 | 520 | 120 | 28 | 43 | 157 | 155 |

**OCCUPATIONS—**

| OCCUPATIONS. | Persons occupied. | AGE AND SEX. | | | |
|---|---|---|---|---|---|
| | | ALL AGES. | | 10 TO 15. | |
| | | Males. | Females. | Males. | Females. |
| *Manufacturing, Mechanical, etc.—Continued.* | | | | | |
| 156. Car-makers, | 4,708 | 4 708 | . . | 69 | . . |
| 157. Carpenters and joiners, | 373.143 | 373 143 | | 460 | . |
| 158. Carpet-makers, * | 17 068 | 9 962 | 7,106 | 654 | 640 |
| 159. Carriage and wagon-makers, | 49 881 | 49 743 | 138 | 412 | 6 |
| 160. Charcoal and lime-burners, | 5,851 | 5,851 | . | 66 | . . |
| 161. Cheese-makers, | 4,570 | 4,230 | 340 | 49 | 3 |
| 162. Chemical works, employees, | 2 923 | 2.509 | 414 | 75 | 43 |
| 163. Cigar-makers, † | 56,599 | 51,267 | 5,332 | 1 799 | 647 |
| 164. Clerks and book-keepers in manufacturing establishm'ts, | 10.114 | 9,921 | 193 | 120 | 12 |
| 165. Clock and watch-makers and repairers, | 13.820 | 12 002 | 1,818 | 286 | 86 |
| 166. Confectioners, | 13 692 | 11,892 | 1,800 | 169 | 123 |
| 167. Coopers, | 49 138 | 49 138 | | 686 | . . |
| 168. Copper-workers, | 2 342 | 2,326 | 16 | 32 | |
| 169. Corset-makers, | 4.660 | 795 | 3,865 | 81 | 374 |
| 170. Cotton-mill operatives, ‡ | 169 771 | 78,292 | 91,479 | 13,115 | 14 891 |
| 171. Distillers and rectifiers, | 3 245 | 3,237 | 8 | 25 | . |
| 172. Employees in manufacturing establishm'ts, (not specified) | 34,536 | 25.885 | 8 651 | 1,336 | 915 |
| 173. Engineers and firemen, | 79 628 | 79 628 | . . . | 91 | . . . |
| 174. Engravers, | 4 577 | 4,474 | 103 | 63 | 2 |
| 175. Fertilizer establishment operatives, | 1,383 | 1,371 | 12 | 15 | 5 |
| 176. File-makers, cutters, and grinders, | 1,839 | 1 817 | 22 | 110 | 4 |
| 177. Fishermen and oystermen, § | 41,352 | 41,287 | 65 | 819 | 4 |
| 178. Flax-dressers, | 1.894 | 904 | 990 | 193 | 186 |
| 179. Fur-workers, | 1,580 | 964 | 616 | 44 | 45 |
| 180. Galloon, gimp, and tassel-makers, | 2,235 | 693 | 1 542 | 70 | 190 |
| 181. Gas-works employees, | 4,695 | 4,680 | 15 | 65 | . . |
| 182. Gilders, | 1,763 | 1,703 | 60 | 32 | 3 |
| 183. Glass-works operatives, | 17.934 | 17.370 | 564 | 2,313 | 94 |
| 184. Glove-makers, | 4.511 | 2,558 | 1,953 | 47 | 106 |
| 185. Gold and silver-workers and jewelers, | 28.405 | 26,438 | 1,967 | 463 | 143 |
| 186. Gun and lock-smiths, | 10,572 | 10,377 | 195 | 180 | 16 |
| 187. Hair-cleaners, dressers, and workers, | 1,965 | 966 | 999 | 127 | 90 |
| 188. Harness and saddle-makers, | 39,960 | 38,409 | 1.551 | 308 | 28 |
| 189. Hat and cap-makers, | 16.860 | 13 004 | 3,856 | 438 | 326 |
| 190. Hosiery and knitting-mill operatives, * | 12,194 | 4,334 | 7,860 | 666 | 1,184 |
| 191. Iron and steel-works and shops operatives, ¶ | 114,539 | 114,137 | 402 | 2,595 | 38 |
| 192. Lace-makers, | 1,708 | 254 | 1,454 | 18 | 174 |
| 193. Lead and zinc-works operatives, | 2,105 | 2,105 | | 58 | . |
| 194. Leather case and pocket-book makers, | 1,397 | 1,073 | 324 | 149 | 48 |
| 195. Leather-curriors, dressers, finishers, and tanners, | 29 842 | 29,642 | 200 | 397 | 5 |
| 196. Lumbermen and raftsmen, | 30.651 | 30,651 | . . . | 154 | . . . |
| 197. Machinists, | 101,130 | 101 130 | . . | 572 | . . . |
| 198. Manufacturers, | 44,019 | 43.612 | 407 | . | . . . |
| 199. Marble and stone-cutters, | 32,842 | 32,342 | . . . . | 155 | . . . |
| 200. Masons, brick and stone, | 102 473 | 102.473 | . | 160 | . . . |
| 201. Meat and fruit-preserving establishment employees, | 2,860 | 2 021 | 839 | 113 | 95 |
| 202. Meat-packers, curers, and picklers, | 3 436 | 3.111 | 325 | 100 | 70 |
| 203. Mechanics, (not specified,) | 7 358 | 7,853 | 5 | 30 | |
| 204. Mill and factory operatives, (not specified,) | 30 836 | 22 803 | 8,186 | 2,348 | 1,383 |
| 205. Millers, | 53,440 | 53 363 | 77 | 294 | 4 |
| 206. Milliners, dress-makers, and seamstresses, ‖ | 285 401 | 3.473 | 281,928 | 86 | 4,657 |
| 207. Miners, | 234 228 | 233,996 | 79 | 11,144 | 14 |
| 208. Mirror and picture-frame makers, | 2,503 | 2,390 | 113 | 229 | 37 |
| 209. Nail-makers, ** | 5,803 | 5,429 | 374 | 277 | 12 |
| 210. Officials of manufacturing and mining companies, | 8,198 | 8,179 | 19 | . . . | . . |

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*See "woolen-mill operatives," and "mill and factory operatives, (not specified.)"

†See "tobacco-workers."

‡See "print-works operatives," and "mill and factory operatives, (not specified.)"

§Largely reported as "sailors," while many who follow the avocation of fishermen for only a portion of the year are reported under some other branch of industry.

*Continued.*

| AGE AND SEX. | | | | NATIVITY. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 TO 59. | | 60 AND OVER. | | | | | | | | | |
| Males. | Females. | Males. | Females. | United States. | Ireland. | Germany. | Great Britain. | Scandinavia. | British America. | Other countries. | |
| 4.510 | . . . | 129 | . . . . . | 3 191 | 351 | 568 | 245 | 84 | 171 | 98 | 156 |
| 345 656 | | 27,027 | . . . . | 287,452 | 14 268 | 30 388 | 13 209 | 5 309 | 15,036 | 7 481 | 157 |
| 8.223 | 6,044 | 1,085 | 422 | 9,634 | 3 234 | 1,514 | 1,918 | 110 | 377 | 281 | 158 |
| 46,102 | 129 | 3,229 | 3 | 37,634 | 1 391 | 6,193 | 1 418 | 544 | 1 591 | 1,110 | 159 |
| 5 593 | . . | 192 | . . . . . | 3,369 | 332 | 355 | 143 | 135 | 251 | 1,266 | 160 |
| 4.113 | 324 | 68 | 13 | 3 863 | 34 | 179 | 138 | 10 | 86 | 260 | 161 |
| 2,342 | 371 | 92 | . . | 1,657 | 397 | 560 | 153 | 5 | 33 | 113 | 162 |
| 48 925 | 4 665 | 543 | 20 | 31.371 | 852 | 11,979 | 1 416 | 208 | 524 | 10 249 | 163 |
| 9 670 | 180 | 131 | 1 | 8 834 | 289 | 366 | 364 | 26 | 131 | 194 | 164 |
| 11,112 | 1.730 | 604 | 2 | 9,584 | 598 | 1 580 | 757 | 200 | 309 | 792 | 165 |
| 11 317 | 1,568 | 406 | 109 | 8 154 | 678 | 2 696 | 819 | 41 | 220 | 1.081 | 166 |
| 44 509 | | 3 943 | . | 32,966 | 3,274 | 8.861 | 814 | 379 | 1 323 | 1 521 | 167 |
| 2 172 | 16 | 122 | . | 1 191 | 350 | 374 | 200 | 55 | 72 | 100 | 168 |
| 709 | 3,480 | 5 | 11 | 3 877 | 358 | 81 | 164 | 1 | 137 | 42 | 169 |
| 63,717 | 76,207 | 1,460 | 381 | 94,010 | 19,732 | 1,998 | 16 237 | 279 | 36,385 | 1,130 | 170 |
| 3.107 | 8 | 105 | . . | 2 443 | 199 | 393 | 57 | 7 | 26 | 120 | 171 |
| 23 855 | 7,671 | 694 | 65 | 24,715 | 2.649 | 3 305 | 1,656 | 196 | 869 | 1,146 | 172 |
| 78 087 | | 1 450 | . . | 57.984 | 6 988 | 4.315 | 6,552 | 521 | 1,980 | 1.288 | 173 |
| 4,305 | 101 | 106 | . . . | 3 179 | 137 | 512 | 425 | 31 | 52 | 241 | 174 |
| 1,332 | 7 | 24 | . . . | 1.101 | 117 | 87 | 19 | 21 | 8 | 30 | 175 |
| 1,680 | 17 | 27 | 1 | 1,144 | 158 | 137 | 291 | 6 | 43 | 60 | 176 |
| 38 514 | 54 | 1,954 | 7 | 30 324 | 1,036 | 765 | 581 | 913 | 2 816 | 4 917 | 177 |
| 686 | 800 | 25 | 4 | 1,056 | 441 | 20 | 275 | 16 | 70 | 16 | 178 |
| 869 | 563 | 51 | 8 | 807 | 204 | 330 | 84 | 9 | 21 | 125 | 179 |
| 596 | 1,347 | 27 | 5 | 1,683 | 57 | 332 | 56 | 6 | 30 | 71 | 180 |
| 4 460 | 15 | 155 | . . . | 2.393 | 1,560 | 291 | 282 | 35 | 56 | 78 | 181 |
| 1,618 | 57 | 53 | . . | 1.069 | 103 | 320 | 142 | 9 | 29 | 91 | 182 |
| 14 836 | 467 | 221 | 3 | 13 479 | 1 152 | 1 474 | 1,039 | 50 | 162 | 578 | 183 |
| 2.447 | 1,819 | 64 | 28 | 3 667 | 162 | 195 | 288 | 9 | 79 | 111 | 184 |
| 25,143 | 1,810 | 832 | 14 | 20,711 | 924 | 3 252 | 1,552 | 249 | 441 | 1,276 | 185 |
| 9.512 | 178 | 685 | 1 | 6 863 | 550 | 1.947 | 564 | 97 | 104 | 447 | 186 |
| 801 | 897 | 38 | 12 | 1 345 | 130 | 227 | 79 | 8 | 50 | 126 | 187 |
| 36,182 | 1 510 | 1,919 | 13 | 29,769 | 1,966 | 4,393 | 1,129 | 243 | 1 214 | 1,246 | 188 |
| 12 116 | 3 506 | 450 | 24 | 12 217 | 1 987 | 1,363 | 628 | 36 | 140 | 489 | 189 |
| 3,526 | 6,600 | 142 | 76 | 9,774 | 610 | 387 | 871 | 17 | 428 | 107 | 190 |
| 109,648 | 364 | 1 894 | . . . | 72 931 | 16 730 | 9.307 | 10,174 | 1,046 | 2 219 | 2,132 | 191 |
| 222 | 1,271 | 14 | 9 | 1,298 | 138 | 97 | 101 | 4 | 13 | 57 | 192 |
| 1.990 | . | 57 | . . | 933 | 405 | 441 | 103 | 16 | 82 | 125 | 193 |
| 907 | 275 | 17 | 1 | 893 | 38 | 377 | 33 | 2 | 6 | 48 | 194 |
| 28,101 | 193 | 1,144 | 2 | 16,193 | 6 027 | 4,112 | 945 | 437 | 1 165 | 963 | 195 |
| 29.889 | . . | 608 | . . | 20.175 | 882 | 980 | 747 | 1 316 | 5 634 | 917 | 196 |
| 97,064 | . | 3.494 | . . . | 70,672 | 6 306 | 8 206 | 9,826 | 972 | 2,752 | 2,396 | 197 |
| 40,605 | 378 | 3,007 | 29 | 32.454 | 1.447 | 5 072 | 2,684 | 153 | 702 | 1 507 | 198 |
| 31,789 | . . | 898 | . . | 18 197 | 6 173 | 2 894 | 3 208 | 256 | 1.088 | 1,026 | 199 |
| 94,584 | . . | 7 729 | . . . | 66,227 | 12,611 | 11,857 | 5,737 | 1.322 | 2,228 | 2,491 | 200 |
| 1,869 | 725 | 39 | 19 | 2,066 | 199 | 199 | 66 | 6 | 121 | 203 | 201 |
| 2,924 | 238 | 87 | 17 | 1,520 | 468 | 523 | 116 | 22 | 39 | 748 | 202 |
| 7 255 | 5 | 568 | . . | 6 741 | 210 | 313 | 286 | 61 | 132 | 115 | 203 |
| 19.682 | 6,725 | 620 | 78 | 22,882 | 2,127 | 1 686 | 1,871 | 243 | 1 281 | 746 | 204 |
| 49,069 | 65 | 4,000 | 8 | 45 228 | 898 | 3 373 | 1,948 | 362 | 898 | 733 | 205 |
| 2,982 | 273,455 | 405 | 3,816 | 239,583 | 16,200 | 9.300 | 7,109 | 1,659 | 7 051 | 4,499 | 206 |
| 218,695 | 63 | 4,310 | 2 | 107 993 | 25,462 | 10 027 | 47,436 | 4,829 | 5,676 | 22 805 | 207 |
| 2 121 | 76 | 40 | . . . | 1,546 | 94 | 417 | 83 | 24 | 45 | 294 | 208 |
| 5,056 | 361 | 96 | 1 | 5.126 | 227 | 135 | 162 | 9 | 94 | 50 | 209 |
| 7,733 | 18 | 446 | 1 | 6.759 | 224 | 298 | 628 | 22 | 140 | 127 | 210 |

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¶ Including foundries, furnaces, and rolling-mills. Large numbers employed in these establishments are returned as "operatives" or "laborers," without designation of trade—see "nail-makers" and stove, furnace, and grate-makers."

‖ In 1870, "seamstresses" were included with "tailors and tailoresses"—see "shirt, collar, and cuff-makers," and "tailors and tailoresses."

** See "iron and steel-works operatives."

## OCCUPATIONS.—

| Occupations. | Persons occupied. | Age and Sex. | | | |
|---|---|---|---|---|---|
| | | All ages. | | 10 to 15. | |
| | | Male. | Female. | Male. | Female. |
| Manufacturing, Mechanical, etc.—*Continued.* | | | | | |
| 211. Oil-mill and refinery operatives, | 3.929 | 3 897 | 32 | 71 | 2 |
| 212. Oil well operators and laborers, | 7.340 | 7,340 | . . | 131 | . |
| 213. Organ-makers, | 2.437 | 2.373 | 64 | 44 | 3 |
| 214. Painters and varnishers, | 128,556 | 128 290 | 266 | 859 | 8 |
| 215. Paperhangers, | 5,013 | 4,859 | 154 | 33 | 3 |
| 216. Paper-mill operatives, | 21,430 | 14 711 | 6,719 | 635 | 506 |
| 217. Pattern-makers, | 5,822 | 5.822 | | 34 | . . |
| 218. Photographers, | 9,990 | 9.539 | 451 | 58 | 5 |
| 219. Pianoforte-makers and tuners, | 5,413 | 5,376 | 37 | 100 | 2 |
| 220. Plasterers, | 22,083 | 22,083 | . . | 28 | . |
| 221. Plumbers and gasfitters, | 19,383 | 19,383 | | 141 | |
| 222. Potters, | 7.233 | 6.644 | 589 | 581 | 131 |
| 223. Printers, lithographers, and stereotypers, | 72,726 | 69,270 | 3,456 | 1,922 | 100 |
| 224. Print-works' operatives,* | 5.419 | 4 318 | 1,101 | 632 | 159 |
| 225. Publishers of books, maps, and newspapers, | 2,781 | 2,745 | 36 | 3 | |
| 226. Pump-makers, | 1.366 | 1 366 | . . . . | 10 | . . |
| 227. Quarrymen, | 15,169 | 15,169 | . . . . | 1,330 | . . . |
| 228. Quartz and stamp-mill operatives and laborers, | 1 449 | 1,449 | . | 19 | |
| 229. Rag pickers, | 2,206 | 1,430 | 776 | 96 | 82 |
| 230. Railroad builders and contractors,† | 1,206 | 1,206 | . | . . . . | |
| 231. Roofers and slaters, | 4,026 | 4 026 | . . | 23 | |
| 232. Rope and cordage-makers, | 3.514 | 3,040 | 474 | 311 | 61 |
| 233. Rubber-factory operatives, | 6,350 | 4 292 | 2 058 | 185 | 192 |
| 234. Sail and awning-makers, | 2 950 | 2,843 | 107 | 85 | 7 |
| 235. Salt-makers, | 1,431 | 1,390 | 41 | 33 | 7 |
| 236. Saw and planing-mill operatives, | 77.050 | 77 050 | . . | 2,116 | . . . |
| 237. Sawyers, | 5 195 | 5.195 | . . . | 33 | . . . |
| 238. Scale and rule-makers, | 1 027 | 1,027 | . . | 39 | . . . |
| 239. Screw-makers, | 1.361 | 796 | 565 | 68 | 143 |
| 240. Sewing-machine factory operatives, | 2,725 | 2,664 | 61 | 120 | 2 |
| 241. Sewing-machine operators, | 7.505 | 1,700 | 5,805 | 66 | 276 |
| 242. Shingle and lath-makers, | 5.166 | 5,125 | 41 | 259 | 6 |
| 243. Ship carpenters, calkers, riggers, and smiths, | 17.452 | 17.452 | | 29 | . |
| 244. Shirt, cuff, and collar-makers,‡ | 11,823 | 3,163 | 8.660 | 135 | 569 |
| 245. Silk-mill operatives, | 18,071 | 8,860 | 9,211 | 1,231 | 1,986 |
| 246. Starch-makers, | 1.385 | 1,218 | 167 | 48 | 18 |
| 247. Stave, shook, and heading-makers, | 4,061 | 4,061 | . . | 324 | . . |
| 248. Steam-boiler makers, | 12 771 | 12,771 | . . . | 147 | . . . |
| 249. Stove, furnace, and grate-makers,§ | 3,341 | 3 341 | | 80 | |
| 250. Straw-workers, | 4,229 | 1,531 | 2,698 | 33 | 62 |
| 251. Sugar-makers and refiners, | 2.327 | 2,313 | 14 | 14 | 1 |
| 252. Tailors and tailoresses,‡ | 133 756 | 81,658 | 52,098 | 1,169 | 3,768 |
| 253. Thread-mill operatives, | 3.259 | 1 148 | 2,111 | 199 | 239 |
| 254. Tinners and tinware-makers, | 42,818 | 41,781 | 1,037 | 689 | 78 |
| 255. Tool and cutlery-makers, | 13,749 | 13 214 | 535 | 526 | 76 |
| 256. Trunk, valise, and carpet-bag makers, | 3 013 | 2,958 | 55 | 176 | 7 |
| 257. Tobacco-factory operatives,¶ | 20.446 | 14,910 | 5,536 | 2 691 | 1,039 |
| 258. Umbrella and parasol-makers, | 1 967 | 1,094 | 873 | 78 | 48 |
| 259. Upholsterers, | 10.443 | 9,901 | 542 | 115 | 13 |
| 260. Wheelwrights, | 15,592 | 15,592 | . . | 216 | . . . |
| 261. Wire-makers and workers, | 7 170 | 6 925 | 245 | 305 | 30 |
| 262. Woodchoppers, | 12.731 | 12 731 | . | 146 | . . |
| 263. Wood-turners, carvers, and wooden-ware makers, | 12 964 | 12,771 | 193 | 278 | 20 |
| 264. Woolen-mill operatives,‖ | 88 010 | 52,504 | 35,506 | 5,146 | 4,782 |
| 265. Others in manufacturing, mechanical, & mining industries, | 13,542 | 10,511 | 3,031 | 268 | 310 |

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*See "cotton-mill operatives" and "mill and factory operatives, (not specified.)"

†See "builders and contractors, (not specified,)" and "bridge builders and contractors."

‡See "milliners, dressmakers, and seamstresses."

§See "iron and steel works operators."

*Continued.*

| AGE AND SEX. | | | | NATIVITY. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 TO 59. | | 60 AND OVER. | | | | | | | | | |
| Male. | Female. | Male. | Female. | United States. | Ireland. | Germany. | Great Britain. | Scandinavia. | British America. | Other countries. | |
| 3.751 | 26 | 75 | 4 | 2 498 | 420 | 650 | 158 | 26 | 67 | 110 | 211 |
| 7.134 | . . . | 75 | . . . | 6,164 | 426 | 161 | 232 | 22 | 279 | 56 | 212 |
| 2 264 | 60 | 65 | 1 | 1,838 | 80 | 178 | 113 | 77 | 98 | 53 | 213 |
| 124 003 | 253 | 3,428 | 5 | 97.767 | 6,177 | 10,260 | 6,334 | 1,758 | 3,138 | 3,122 | 214 |
| 4,693 | 147 | 133 | 4 | 4.033 | 176 | 3[illegible]8 | 290 | 12 | 62 | 107 | 215 |
| 13.595 | 6,124 | 481 | 89 | 14 315 | 3,753 | 703 | 1,135 | 80 | 1,081 | 363 | 216 |
| 5,364 | . . . . | 424 | . . | 4 104 | 196 | 456 | 633 | 68 | 164 | 196 | 217 |
| 9 316 | 443 | 165 | 3 | 8 261 | 110 | 520 | 465 | 110 | 299 | 225 | 218 |
| 5 015 | 35 | 261 | . . . | 2 773 | 182 | 1,709 | 201 | 153 | 139 | 256 | 219 |
| 21 234 | . . . | 821 | . . . | 15,998 | 2 627 | 1,220 | 1 222 | 163 | 487 | 366 | 220 |
| 19.047 | . . | 195 | . . | 13 980 | 2,547 | 735 | 1.485 | 50 | 396 | 190 | 221 |
| 5 821 | 455 | 242 | 3 | 4 763 | 461 | 670 | 1 056 | 43 | 71 | 169 | 222 |
| 66 418 | 3,349 | 930 | 7 | 60,365 | 2,838 | 3 338 | 3,138 | 370 | 1,6 7 | 1,020 | 223 |
| 3,564 | 941 | 122 | 1 | 3 302 | 985 | 170 | 730 | 30 | 95 | 57 | 224 |
| 2,615 | 36 | 127 | . . . | 2,326 | 93 | 104 | 139 | 9 | 64 | 46 | 225 |
| 1,230 | . . . . | 126 | . . . | 1.174 | 23 | 80 | 38 | 9 | 24 | 18 | 226 |
| 13.358 | . . | 481 | . . . | 8,226 | 3,068 | 742 | 1,624 | 546 | 567 | 396 | 227 |
| 1 424 | . | 6 | . | 805 | 128 | 92 | 142 | 51 | 101 | 130 | 228 |
| 1,163 | 610 | 171 | 84 | 643 | 255 | 291 | 33 | 3 | 8 | 973 | 229 |
| 1,157 | . . . | 49 | . | 875 | 143 | 28 | 67 | 39 | 40 | 14 | 230 |
| 3.899 | . . | 104 | . . | 2,534 | 602 | 255 | 475 | 12 | 88 | 60 | 231 |
| 2,578 | 409 | 151 | 4 | 2 339 | 367 | 456 | 161 | 19 | 55 | 117 | 232 |
| 3 994 | 1,857 | 113 | 9 | 4,143 | 1,230 | 486 | 298 | 15 | 109 | 69 | 233 |
| 2 557 | 96 | 201 | 4 | 2,168 | 215 | 111 | 167 | 92 | 90 | 107 | 234 |
| 1,322 | 34 | 30 | . . . | 710 | 243 | 212 | 24 | 12 | 141 | 89 | 235 |
| 73,871 | . . . . | 1 063 | . . . . . | 56.468 | 1,714 | 4,967 | 1,118 | 2,956 | 6,933 | 2,894 | 236 |
| 4 936 | . . . . | 226 | . . . . . | 4,214 | 160 | 366 | 151 | 31 | 192 | 81 | 237 |
| 953 | . | 35 | . . . . . | 720 | 48 | 93 | 44 | 6 | 91 | 25 | 238 |
| 719 | 421 | 9 | 1 | 990 | 187 | 39 | 85 | 6 | 37 | 17 | 239 |
| 2,513 | 59 | 31 | . . . . . | 2,024 | 209 | 230 | 126 | 26 | 71 | 39 | 240 |
| 1,615 | 5,514 | 19 | 15 | 5,345 | 795 | 386 | 257 | 15 | 103 | 604 | 241 |
| 4 736 | 35 | 130 | . . . | 4.082 | 81 | 153 | 73 | 86 | 514 | 177 | 242 |
| 15,879 | | 1,544 | . . | 11,847 | 1 493 | 632 | 1 192 | 364 | 1,417 | 507 | 243 |
| 2 967 | 8 006 | 61 | 85 | 9.098 | 1,219 | 511 | 230 | 34 | 175 | 506 | 244 |
| 7,389 | 7,195 | 190 | 30 | 11 397 | 1,365 | 1,421 | 1,875 | 86 | 186 | 1,741 | 245 |
| 1 138 | 149 | 32 | . . . | 823 | 263 | 157 | 58 | 13 | 39 | 32 | 246 |
| 3,693 | . . . | 44 | . . . | 3 511 | 72 | 180 | 43 | 38 | 174 | 43 | 247 |
| 12.431 | | 193 | . . | 6 943 | 2,683 | 841 | 1,668 | 76 | 348 | 212 | 248 |
| 3,203 | | 58 | . . | 2,302 | 323 | 427 | 128 | 52 | 41 | 68 | 249 |
| 1,439 | 2,605 | 54 | 31 | 3 857 | 122 | 35 | 92 | 17 | 81 | 25 | 250 |
| 2 219 | 13 | 80 | . | 653 | 268 | 1,078 | 54 | 24 | 23 | 227 | 251 |
| 73,738 | 47,238 | 6,751 | 1,092 | 62,175 | 10 297 | 37,684 | 5,016 | 4 057 | 2,314 | 12,213 | 252 |
| 935 | 1,871 | 14 | 1 | 2,120 | 405 | 31 | 403 | 2 | 290 | 8 | 253 |
| 40 040 | 955 | 1,052 | 4 | 32 482 | 1,833 | 4,609 | 1,594 | 313 | 929 | 1,058 | 254 |
| 12,322 | 458 | 366 | 1 | 8,380 | 937 | 1,506 | 1,574 | 118 | 759 | 475 | 255 |
| 2,717 | 48 | 65 | . . . . | 1.935 | 161 | 629 | 81 | 5 | 55 | 147 | 256 |
| 12 006 | 4,433 | 213 | 64 | 18.670 | 402 | 663 | 141 | 30 | 82 | 458 | 257 |
| 951 | 816 | 65 | 9 | 1 392 | 252 | 168 | 90 | 1 | 11 | 53 | 258 |
| 9,538 | 512 | 248 | 17 | 6.497 | 603 | 2,043 | 515 | 201 | 209 | 375 | 259 |
| 14 098 | . . . | 1,278 | . . . . | 12 350 | 681 | 1,453 | 333 | 45 | 425 | 305 | 260 |
| 6 514 | 215 | 106 | . . . . . | 4.041 | 1,051 | 782 | 543 | 276 | 189 | 288 | 261 |
| 12 104 | . . . | 481 | . . . . | 8 578 | 235 | 251 | 209 | 175 | 1,658 | 1,625 | 262 |
| 12,040 | 171 | 453 | 2 | 8,584 | 438 | 2.284 | 556 | 163 | 376 | 563 | 263 |
| 45,304 | 30,110 | 2,054 | 614 | 53,442 | 12.737 | 3 762 | 10,494 | 482 | 6 093 | 1,000 | 264 |
| 9 744 | 2,490 | 499 | 231 | 9,537 | 1,120 | 1,248 | 620 | 111 | 297 | 609 | 265 |

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¶ See "cigar-makers."

‖ See "carpet-makers," "hosiery and knitting-mill operatives," and "mill and factory operatives, (not specified.)"

# TARIFF OF 1883.

As the law recently enacted by Congress providing for duties upon imports is of great importance to Pennsylvania interests, and as our reports reach very many of the mechanics and workmen of the State who otherwise would fail to obtain it, we deem it of sufficient importance to reproduce the principal schedules affecting our industries, and thus afford them the facilities to familiarize themselves with the duties now enforced.

## SCHEDULE B.

### Earthenware and Glassware.

Brown earthenware, common stoneware, gas retorts, and stoneware not ornamented, 25 per cent. *ad valorem.*

China, porcelain, parian, and bisque, earthen, stone, and crockery ware, including plaques, ornaments, charms, vases, and statuettes, painted, printed, or gilded, or otherwise decorated or ornamented in any manner, 60 per cent. *ad valorem.*

China, porcelain, parian, and bisque ware, plain white and not ornamented or decorated in any manner, 55 per cent. *ad valorem.*

All other earthen, stone, and crockery-ware, white, glazed or edged, composed of earthy or mineral substances, not specially enumerated or provided for in this act, 55 per cent. *ad valorem.*

Stone-ware, above the capacity of 10 gallons, 20 per cent. *ad valorem.*

Encaustic tiles, 35 per cent. *ad valorem.*

Brick, fire-brick, and roofing and paving tile, not specially enumerated or provided for in this act, 20 per cent. *ad valorem.*

Slates, slate pencils, slate chimney pieces, mantels, slabs for tables, and all other manufactures of slate, 30 per cent. *ad valorem.*

Roofing slates, 25 per cent. *ad valorem.*

Green and colored glass bottles, vials, demijohns, and carboys, (covered or uncovered,) pickle or preserve jars, and other plain, molded or pressed green and colored bottle glass, not cut, engraved or painted, and not specially enumerated or provided for in this act, 1 cent per pound; if filled, and not otherwise in this act provided for, said articles shall pay 30 per cent. *ad valorem* in addition to the duty on the contents.

Flint and lime glass bottles and vials, and other plain, molded or pressed flint or lime glass-ware, not specially enumerated or provided for in this act, 40 per cent. *ad valorem;* if filled, and not otherwise in this act provided for, said articles shall pay, exclusive of contents, 40 per cent. *ad valorem* in addition to the duty on the contents.

Articles of glass, cut, engraved, painted, colored, printed, stained, silvered or gilded, not including plate-glass silvered or looking-glass plates, 45 per cent. *ad valorem.*

All glass bottles and decanters, and other like vessels of glass, shall, if filled, pay the same rates of duty, in addition to any duty chargeable on the contents as if not filled, except as in this act otherwise specially provided for.

Cylinder and crown glass polished, not exceeding 10 by 15 inches square, 2½ cents per square foot; above that, and not exceeding 16 by 24 inches square, 4 cents per square foot; above that, and not exceeding 24 by 30 inches square, six cents per square foot; above that, and not exceeding 24 by 60 inches square, 20 cents per square foot; all above that, 40 cents per square foot.

Unpolished cylinder, crown, and common window glass, not exceeding 10 by 15 inches square, 1⅜ cents per pound; above that, and not exceeding 16 by 24 inches square, 1⅞ cents per pound; above that and not exceeding 24 by 30 inches square, 2⅜ cents per pound; all above that, 2⅞ cents per pound: *Provided*, That unpolished cylinder, crown, and common window glass, imported in boxes containing 50 square feet, as nearly as sizes will permit, now known and commercially designated as 50 feet of glass, single thick, and weighing not to exceed 55 pounds of glass per box, shall be entered and computed as 50 pounds of glass only; and that said kinds of glass imported in boxes containing as nearly as sizes will permit, 50 feet of glass, now known and commercially designated as 50 feet of glass, double thick, and not exceeding 90 pounds in weight, shall be entered and computed as 80 pounds of glass only; but in all other cases the duty shall be computed according to the actual weight of the glass.

Fluted, rolled or rough plate-glass, not including crown, cylinder or common window glass, not exceeding 10 by 15 inches square, 75 cents per 100 square feet; above that, and not exceeding 16 by 24 inches square, 1 cent per square foot; above that, and not exceeding 24 by 30 inches square, 1½ cents per square foot; all above that, 2 cents per square foot. And all fluted, rolled or rough plate-glass, weighing over 100 pounds per 100 square feet, shall pay an additional duty on the excess at the same rates herein imposed.

Cast polished plate glass, unsilvered, not exceeding 10 by 15 inches square, 3 cents per square foot; above that, and not exceeding 16 by 24 inches square, 5 cents per square foot; above that, and not exceeding 24 by 30 inches square, 8 cents per square foot; above that, and not exceeding 24 by 60 inches square, 25 cents per square foot; all above that 50 cents per square foot.

Cast polished plate glass, silvered or looking-glass plates, not exceeding 10 by 15 inches square, 4 cents per square foot; above that, and not exceeding 16 by 24 inches square, 6 cents per square foot; above that, and not exceeding 24 by 30 inches square, 10 cents per square foot; above that, and not exceeding 24 by 60 inches square, 35 cents per square foot; all above that, 60 cents per square foot.

But no looking-glass plates or plate glass, silvered, when framed, shall pay a less rate of duty than that imposed upon similar glass of like description not framed, but shall be liable to pay in addition thereto, 30 per cent. *ad valorem*, upon such frames.

Porcelain and Bohemian glass, chemical glass-ware, painted glass-ware, stained glass, and all other manufactures of glass, or of which glass shall be the component material of chief value, not specially enumerated or provided for in this act, 45 per cent. *ad valorem.*

## SCHEDULE C.

### Metals.

Iron ore, including manganiferous iron ore, also the dross or residuum from burnt pyrites, 75 cents per ton. Sulphur ore, as pyrites or sulphuret of iron in its natural state, containing not more than 3½ per cent. of copper, 75 cents per ton: *Provided*, That ore containing more than 2 per cent. of copper shall pay, in addition thereto, 2½ cents per pound for the copper contained therein.

Iron in pigs, iron kentledge, spiegeleisen, wrought and cast scrap-iron, and scrap-steel, three tenths of one cent per pound; but nothing shall be deemed scrap-iron or scrap-steel except waste or refuse-iron or steel that has been in actual use and is fit only to be remanufactured.

Iron railway bars, weighing more than 25 pounds to the yard, seven tenths of one cent per pound.

Steel railway bars and railway bars made in part of steel, weighing more than 25 pounds to the yard, $17 per ton.

Bar-iron, rolled or hammered, comprising flats not less than 1 inch wide, nor less than ⅜ of 1 inch thick, eight tenths of one cent per pound; comprising round iron not less than ¾ of 1 inch in diameter, and square iron not less than ¾ of 1 inch square, 1 cent per pound; comprising flats less than 1 inch wide, or less than ⅜ of 1 inch thick; round iron less than ¾ of 1 inch, and not less than $\frac{7}{16}$ of 1 inch in diameter, and square iron less than ¾ of 1 inch square 1.1 cents per pound: *Provided*, That all iron in slabs, blooms, loops, or other forms, less finished than iron in bars and more advanced than pig-iron except castings, shall be rated as iron in bars, and pay a duty accordingly and none of the above iron shall pay a less rate of duty than 35 per cent *ad valorem: Provided further*, That all iron bars, blooms, billets, or sizes or shapes of any kind, in the manufacture of which charcoal is used as fuel shall be subject to a duty of $22 per ton.

Iron or steel tee rails, weighing not over 25 pounds to the yard, nine tenths of one cent per pound; iron or steel flat rails, punched, eight tenths of one cent per pound.

Round iron, in coils or rods, less than $\frac{7}{16}$ of 1 inch in diameter, and bars or shapes of rolled iron not specially enumerated or provided for in this act, 1.2 cents per pound.

Boiler, or other plate-iron, sheared or unsheared, skelp-iron, sheared or rolled in grooves, 1¼ cents per pound; sheet-iron, common or black, thinner than 1½ inches, and not thinner than No. 20 wire guage, 1.1 cents per pound; thinner than No. 20 wire guage, and not thinner than No. 25 wire guage, 1.2 cents per pound; thinner than No. 25 wire guage, and not thinner than No. 29 wire guage, 1.5 cents per pound; thinner than No. 29 wire guage, and all iron commercially known as common or black taggers-iron, whether put up in boxes or bundles or not, 30 per cent. *ad valorem*: *And provided*, That on all such iron and steel sheets or plates aforesaid, excepting on what are known commercially as tin plates, terne plates, and taggers-tin, and hereafter provided for, when galvanized or coated with zinc or spelter or other metals, or any alloy of those metals, ¾ cent per pound additional.

Polished, planished, or glanced sheet-iron or sheet-steel, by whatever name designated, 2½ cents per pound: *Provided*, That plate, or sheet, or taggers-iron, by whatever name designated, other than the polished, planished, or glanced herein provided for, which has been pickled or cleaned by acid, or by any other material or process, and which is cold rolled, shall pay ¼ cent per pound more duty than the corresponding guages of common or black sheet or taggers-iron.

Iron or steel sheets, or plates, or taggers-iron, coated with tin or lead, or with a mixture of which these metals is a component part, by the dipping or any other process, and commercially known as tin plates, terne plates, and taggers-tin, 1 cent per pound; corrugated or crimped sheet-iron or steel, 1.4 cent per pound.

Hoop, or band, or scroll, or other iron, 8 inches or less in width, and not thinner than No. 10 wire guage, 1 cent per pound; thinner than No. 10 wire guage, and not thinner than No. 20 wire guage, 1.2 cents per pound; thinner than No. 20 wire guage, 1.4 cents per pound: *Provided*, That all articles not specially enumerated or provided for in this act, whether wholly or partly manufactured, made from sheet, plate, hoop, band, or scroll-iron herein provided for, or of which such sheet, plate, hoop, band, or scroll-iron shall be the material of chief value, shall pay ¼ cent per pound more duty than that imposed on the iron from which they are made, or which shall be such material of chief value.

Iron and steel cotton-ties or hoops for baling purposes, not thinner than No. 20 wire guage, 35 per cent. *ad valorem.*

Cast-iron pipe of every description, 1 cent per pound.

Cast-iron vessels, plates, stove-plates, andirons, sad-irons, tailors' irons, hatters' irons, and castings of iron, not specially enumerated or provided for in this act, 1¼ cents per pound.

Cut nails and spikes, of iron or steel, 1¼ cents per pound.

Cut tacks, brads, or sprigs, not exceeding 16 ounces to the 1000, 2½ cents per 1000; exceeding 16 ounces to the 1000, 3 cents per pound.

Iron or steel railway fish-plates or splice bars, 1¼ cents per pound.

Malleable-iron castings, not specially enumerated or provided for in this act, 2 cents per pound.

Wrought-iron or steel spikes, nuts, and washers, and horse, mule, or ox shoes, 2 cents per pound.

Anvils, anchors, or parts thereof, mill-irons, and mill-cranks of wrought-iron, and wrought-iron for ships, and forgings of iron and steel for vessels, steam engines, and locomotives, or parts thereof, weighing each 25 pounds or more, 2 cents per pound.

Iron or steel rivets, bolts, with or without threads or nuts, or bolt blanks, and finished hinges or hinge blanks, 2½ cents per pound.

Iron or steel blacksmiths' hammers and sledges, track tools, wedges, and crowbars, 2½ cents per pound.

Iron or steel axles, parts thereof, axle bars, axle blanks, or forgings for axles, without reference to the stage or state of manufacture, 2½ cents per pound.

Forgings of iron and steel or forged-iron, of whatever shape or in whatever stage of manufacture, not specially enumerated or provided for in this act, 2½ cents per pound.

Horse-shoe nails, hob-nails, and wire nails, and all other wrought-iron or steel nails, not specially enumerated or provided for in this act, 4 cents per pound.

Boiler tubes, or flues, or stays of wrought-iron or steel, 3 cents per pound.

Other wrought-iron or steel tubes or pipes, 2¼ cents per pound.

Chain or chains of all kinds, made of iron or steel, not less than ¾ inch in diameter, 1¾ cents per pound; less than ¾ inch, and not less than ⅜ inch in diameter, 2 cents per pound; less than ⅜ inch in diameter, 2½ cents per pound.

Cross-cut saws, 8 cents per linear foot.

Mill, pit, and drag saws, not over 9 inches wide, 10 cents per linear foot; over 9 inches wide, 15 cents per linear foot.

Circular saws, 30 per cent. *ad valorem.*

Hand, back, and all other saws, not specially enumerated or provided for in this act, 40 per cent. *ad valorem.*

Files, file blanks, rasps, and floats of all cuts and kinds, 4 inches in length and under, 35 cents per dozen; over 4 inches in length and under 9 inches, 75 cents per dozen; 9 inches in length and under 14 inches, $1 50 per dozen; 14 inches in length and over, $2 50 per dozen.

Steel ingots, cogged ingots blooms and slabs, by whatever process made; die blocks or blanks; billets and bars, and tapered or beveled bars; bands, hoops, strips, and sheets of all gauges and widths; plates of all thicknesses and widths; steamer, crank, and other shafts; wrist or crank pins; connecting-rods and piston-rods; pressed, sheared, or stamped shapes, or blanks of sheet or plate steel, or combination of steel and iron, punched or not punched; hammer-molds or swaged steel; gun-molds not in bars; alloys used as substitutes for steel tools; all descriptions and shapes of dry-sand, loam, or iron-molded steel castings, all of the above classes of steel not otherwise specially provided for in this act, valued at 4 cents a pound or less, 45 per cent. *ad valorem ;* above 4 cents a pound and not above 7 cents per pound, 2 cents per pound; valued above 7 cents and not above 10 cents per pound, 2¾ cents per pound; valued at above 10 cents per pound, 3¼ cents per pound: *Provided*, That on all iron or steel bars, rods, strips, or steel sheets, of whatever shape, and on all iron or steel bars of irregular shape or section, cold-rolled, cold-hammered, or polished in any way in addition to the ordinary process of hot-rolling or hammering, there shall be paid ¼ cent per pound in addition to the rates provided in this act; and on steel circular-saw plates there shall be paid 1 cent per pound in addition to the rate provided in this act.

Iron or steel beams, girders, joists, angles, channels, car-truck channels, TT, columns and posts, or parts or sections of columns and posts, deck and bulb beams, and building forms, together with all other structural shapes of iron or steel, 1¼ cents per pound.

Steel wheels and steel-tired wheels for railway purposes, whether wholly or partly finished, and iron or steel locomotive, car, and other railway tires, or parts thereof, wholly or partly manufactured, 2½ cents per pound; iron or steel ingots, cogged ingots, blooms, or blanks for the same, without regard to the degree of manufacture, 2 cents per pound.

Iron or steel rivet, screw, nail, and fence, wire rods, round, in coils and loops, not lighter than No. 5 wire gauge, valued at 3½ cents or less per pound, six tenths of one cent per pound. Iron or steel, flat, with longitudinal ribs for the manufacture of fencing, six tenths of one cent per pound.

Screws, commonly called wood screws, 2 inches or over in length, 6 cents per pound; 1 inch and less than 2 inches in length, 8 cents per pound; over ½ inch and less than 1 inch in length, 10 cents per pound; ½ inch and less in length, 12 cents per pound.

Iron or steel wire, smaller than No. 5 and not smaller than No. 10 wire gauge, 1½ cents per pound; smaller than No. 10 and not smaller than No. 16 wire gauge, 2 cents per pound; smaller than No. 16 and not smaller than No. 26 wire gauge, 2½ cents per pound; smaller than No. 26 wire gauge, 3 cents per pound: *Provided*, That iron or steel wire covered with cotton, silk, or other material, and wire commonly known as crinoline, corset, and hat wire, shall pay 4 cents per pound in addition to the foregoing rates: *And provided further*, That no article made from iron or steel wire, or of which iron or steel wire is a component part of chief value, shall pay a less rate of duty than the iron or steel wire from which it is made either wholly or in part: *And provided further*, That iron or steel wire cloths, and iron or steel wire nettings, made in meshes of any form, shall pay a duty equal in amount to that imposed on iron or steel wire of the same gauge, and 2 cents per pound in addition thereto. There shall be paid on galvanized iron or steel wire (except fence wire) ½ cent per pound in addition to the rate imposed on the wire of which it is made. On iron wire rope and wire strand, 1 cent per pound in addition to the rates imposed on the wire of which it is made. On steel wire rope and wire strand, 2 cents per pound in addition to the rates imposed on the wire of which it is made.

Steel not specially enumerated or provided for in this act, 45 per cent. *ad valorem: Provided*, That all metal produced from iron or its ores, which is cast and malleable, of whatever description or form, without regard to the percentage of carbon contained therein, whether produced by cementation, or converted, cast, or made from iron or its ores, by the crucible, Bessemer, pneumatic, Thomas-Gilchrist, basic, Siemens-Martin, or open-hearth process, or by the equivalent of either, or by the combination of two or more of the processes or their equivalents, or by any fusion or other process which produces from iron or its ores a metal either granular or fibrous in structure, which is cast and malleable, excepting what is known as malleable iron castings, shall be classed and denominated as steel.

No allowance or reduction of duties for partial loss or damage, in consequence of rust or of discoloration, shall be made upon any description of iron or steel, or upon any partly manufactured article of iron or steel, or upon any manufacture of iron or steel.

Argentine, albata, or German silver, unmanufactured, 25 per cent. *ad valorem*.

Copper, imported in the form of ores, 2½ cents on each pound of fine copper contained therein; regulus of and black or coarse copper and copper cement, 3½ cents on each pound of fine copper contained therein; old copper, fit only for remanufacture, clippings from new copper, and all composition metal of which copper is a component material of chief value not specially enumerated or provided for in this act, 3 cents per pound; copper in plates, bars, ingots, Chili or other pigs, and in other forms, not manufactured, or enumerated in this act, 4 cents per pound; in rolled plates, called brazier's copper, sheets, rods, pipes, and copper bottoms, and all manufactures of copper, or of which copper shall be a component of chief value, not specially enumerated or provided for in this act, 35 per cent. *ad valorem*.

Brass, in bars or pig, old brass, and clippings from brass or Dutch metal, 1½ cents per pound.

Lead ore, and lead dross, 1½ cents per pound.

Lead, in pigs and bars, molten and old refuse lead run into blocks and bars, and old scrap lead, fit only to be remanufactured, 2 cents per pound.

Lead, in sheets, pipes, or shot, 3 cents per pound.

Nickel, in ore, matte, or other crude form not ready for consumption in the arts, 15 cents per pound on the nickel contained therein.

Nickel, nickel oxide, alloy of any kind in which nickel is the element of chief value, 15 cents per pound.

Zinc, spelter, or tutenegue, in blocks or pigs, and old worn-out zinc, fit only to be remanufactured, 1½ cents per pound; zinc, spelter, or tutenegue in sheets, 2½ cents per pound.

Sheathing, or yellow metal, not wholly of copper, nor wholly nor in part of iron, ungalvanized, in sheets, 48 inches long and 14 inches wide, and weighing from 14 to 34 ounces per square foot, 35 per cent. *ad valorem.*

Antimony, as regulus or metal, 10 per cent. *ad valorem.*

Bronze powder, 15 per cent. *ad valorem.*

Cutlery, not specially enumerated or provided for in this act, 35 per cent. *ad valorem.*

Dutch or bronze metal, in leaf, 10 per cent. *ad valorem.*

Steel plates, engraved, stereotype plates, and new types, 25 per cent. *ad valorem.*

Gold leaf, $1 50 per package of 500 leaves.

Hollow-ware, coated, glazed, or tinned, 3 cents per pound.

Muskets, rifles, and other fire-arms, not specially enumerated or provided for in this act, 25 per cent. *ad valorem.*

All sporting breech-loading shot guns, and pistols of all kinds, 35 per cent. *ad valorem.*

Forged shot-gun barrels, rough-bored, 10 per cent. *ad valorem.*

Needles for knitting or sewing machines, 35 per cent. *ad valorem.*

Needles, sewing, darning, knitting, and all others not specially enumerated or provided for in this act, 25 per cent. *ad valorem.*

Pen-knives, pocket-knives of all kinds, and razors, 50 per cent. *ad valorem;* swords, sword-blades, and side arms, 35 per cent. *ad valorem.*

Pens, metallic, 12 cents per gross; pen-holder tips, and pen-holders, or parts thereof, 30 per cent. *ad valorem.*

Pins, solid head or other, 30 per cent. *ad valorem.*

Britannia-ware, and plated and gilt articles and wares of all kinds, 35 per cent. *ad valorem.*

Quicksilver, 10 per cent. *ad valorem.*

Silver leaf, 75 cents per package of 500 leaves.

Type metal, 20 per cent. *ad valorem.*

Chromate of iron, or chromic ore, 15 per cent. *ad valorem.*

Mineral substances in a crude state, and metals unwrought, not specially enumerated or provided for in this act, 20 per cent. *ad valorem.*

Manufactures, articles or wares not specially enumerated or provided for in this act, composed wholly or in part of iron, steel, copper, lead, nickel, pewter, tin, zinc, gold, silver, platinum, or any other metal, and whether partly or wholly manufactured, 45 per cent. *ad valorem.*

## SCHEDULE I.

### Cotton and Cotton Goods.

Cotton thread, yarn, warps or warp yarn, whether single or advanced beyond the condition of single, by twisting two or more single yarns together, whether on beams or in bundles, skeins or cops, or in any other form, valued at not exceeding 25 cents per pound, 10 cents per pound; valued at over 25 cents per pound, and not exceeding 40 cents per pound, 15 cents per pound; valued at over 40 cents per pound, and not exceeding 50 cents per pound, 20 cents per pound; valued at over 50 cents per pound, and not exceeding 60 cents per pound, 25 cents per pound; valued at over 60 cents per pound, and not exceeding 70 cents per pound, 33 cents per pound; valued at over 70 cents per pound, and not exceeding 80 cents per pound, 38 cents per pound; valued at over 80 cents per pound, and not exceeding $1 per pound 48 cents per pound; valued at over $1 per pound, 50 per cent. *ad valorem.*

On all cotton cloth not bleached, dyed, colored, stained, painted, or printed, and not exceeding 100 threads to the square inch, counting the warp and filling, 2½ cents per square yard; if bleached, 3½ cents per square yard; if dyed, colored, stained, painted, or printed, 4½ cents per square yard.

On all cotton cloth not bleached, dyed, colored, stained, painted, or printed, exceeding 100, and not exceeding 200 threads to the square inch, counting the warp and filling, 3 cents per square yard; if bleached, 4 cents per square yard; if dyed, colored, stained, painted, or printed, 5 cents per square yard: *Provided*, That on all cotton cloth not exceeding 200 threads to the square inch, counting the warp and filling, not bleached, dyed, colored, stained, painted, or printed, valued at over 8 cents per square yard; bleached, valued at over 10 cents per square yard; dyed, colored, stained, painted, or printed, valued at over 13 cents per square yard, there shall be levied, collected, and paid a duty of 40 per cent. *ad valorem.*

On all cotton cloth exceeding 200 threads to the square inch, counting the warp and filling, not bleached, dyed, colored, stained, painted, or printed, 4 cents per square yard; if bleached, 5 cents per square yard; if dyed, colored, stained, painted, or printed, 6 cents per square yard: *Provided*, That on all such cotton cloths not bleached, dyed, colored, stained, painted, or printed, valued at over 10 cents per square yard; bleached, valued at over 12 cents per square yard, and dyed, colored, stained, painted, or printed, valued at over 15 cents per square yard, there shall be levied, collected, and paid a duty of 40 per cent. *ad valorem.*

On stockings, hose, half-hose, shirts, and drawers, and all goods made on knitting machines or frames, composed wholly of cotton, and not herein otherwise provided for, 35 per cent. *ad valorem.*

On stockings, hose, half-hose, shirts, and drawers, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, and composed wholly of cotton, 40 per cent. *ad valorem.*

Cotton cords, braids, gimps, galloons, webbing, goring, suspenders, braces, and all manufactures of cotton, not specially enumerated or provided for in this act, and corsets, of whatever material composed, 35 per cent. *ad valorem.*

Cotton laces, embroideries, insertings, trimmings, lace window curtains, cotton damask, hemmed handkerchiefs, and cotton velvet, 40 per cent. *ad valorem.*

Spool thread of cotton, 7 cents per dozen spools, containing on each spool not exceeding 100 yards of thread; exceeding 100 yards on each spool, for every additional 100 yards of thread or fractional part thereof in excess of 100 yards, 7 cents per dozen.

## SCHEDULE J.

### Hemp, Jute, and Flax Goods.

Flax straw, $5 per ton.

Flax, not hackled or dressed, $20 per ton.

Flax, hackled, known as "dressed line," $40 per ton.

Tow, of flax or hemp, $10 per ton.

Hemp, manila and other like substitutes for hemp not specially enumerated or provided for in this act, $25 per ton.

Jute butts, $5 per ton.

Jute, 20 per cent. *ad valorem;* sunn, sisal grass, and other vegetable substances, not specially enumerated or provided for in this act, $15 per ton.

Brown and bleached linens, ducks, canvas, paddings, cot bottoms, diapers, crash, huckabacks, handkerchiefs, lawns or other manufactures of flax, jute, or hemp, or of which flax, jute, or hemp shall be the component material of chief value, not specially enumerated or provided for in this act, 35 per cent. *ad valorem.*

Flax, hemp, and jute yarns, 35 per cent. *ad valorem.*

Flax or linen thread, twine and pack-thread and all manufactures of flax, or of which flax shall be the component material of chief value, not specially enumerated or provided for in this act, 40 per cent. *ad valorem.*

Flax or linen laces and insertings, embroideries, or manufactures of linen, if embroidered or tamboured in the loom or otherwise, by machinery or with the needle or other process, and not specially enumerated or provided for in this act, 30 per cent. *ad valorem.*

Burlaps, not exceeding 60 inches in width, of flax, jute, or hemp, or of which flax, jute, or hemp, or either of them, shall be the component material of chief value, (except such as may be suitable for bagging for cotton,) 30 per cent. *ad valorem.*

Oilcloth foundations, or floor-cloth canvas, or burlaps exceeding 60 inches in width, made of flax, jute, or hemp, or of which flax, jute, or hemp, or either of them, shall be the component material of chief value, 40 per cent. *ad valorem.*

Oilcloths for floors, stamped, painted, or printed, and on all other oilcloth (except silk oilcloth,) and on water-proof cloth, not otherwise provided for, 40 per cent. *ad valorem.*

Gunny-cloth, not bagging, valued at 10 cents or less per square yard, 3 cents per pound; valued at over 10 cents per square yard, 4 cents per pound.

Bags and bagging, and like manufactures, not specially enumerated or provided for in this act (except bagging for cotton,) composed wholly or in part of flax, hemp, jute, gunny-cloth, gunny-bags, or other material, 40 per cent. *ad valorem.*

Bagging for cotton, or other manufactures not specially enumerated or provided for in this act, suitable to the uses for which cotton bagging is applied, composed in whole or in part of hemp, jute, jute butts. flax, gunny-bags, gunny-cloth, or other material, and valued at 7 cents or less per square yard, 1½ cents per pound; valued at over 7 cents per square yard, 2 cents per pound.

Tarred cables or cordage, 3 cents per pound.

Untarred manila cordage, 2½ cents per pound.

All other untarred cordage, 3½ cents per pound.

Seines, and seine and gilling twine, 25 per cent. *ad valorem.*

Sail duck, or canvas for sails, 30 per cent. *ad valorem.*

Russia and other sheetings, of flax or hemp, brown or white, 35 per cent. *ad valorem.*

All other manufactures of hemp, or manila, or of which hemp or manila shall be a component material of chief value, not specially enumerated or provided for in this act, 35 per cent. *ad valorem.*

Grass-cloth, and other manufactures of jute, ramie, China, and sisal grass, not specially enumerated or provided for in this act, 35 per cent. *ad valorem.*

## SCHEDULE K.

### Wool and Woolens.

All wools, hair of the alpaca, goat, and other like animals, shall be divided, for the purpose of fixing the duties to be charged thereon, into the three following classes:

Class 1, clothing wools—that is to say, merino, mestiza, metz, or metis wools, or other wools of merino blood, immediate or remote, Down clothing wools, and wools of like character with any of the preceding, including such as have been heretofore usually imported into the United States from Buenos Ayres, New Zealand, Australia, Cape of Good Hope, Russia, Great Britain, Canada, and elsewhere, and also including all wools not hereinafter described and designated in classes 2 and 3.

Class 2, combing wools—that is to say, Leicester, Cotswold, Lincolnshire, Down combing wools, Canada long wools, or other like combing wools of English blood, and usually known by the terms herein used, and also all hair of the alpaca, goat, and other like animals.

Class 3, carpet wools and other similar wools—such as Donskoi, native South American, Cordova, Valparaiso, native Smyrna, and including all such wools of like character as have been heretofore usually imported into the United States from Turkey, Greece, Egypt, Syria, and elsewhere.

The duty on wools of the first class which shall be imported washed shall be twice the amount of the duty to which they would be subjected if imported unwashed; and the duty on wools of all classes which shall be imported scoured shall be three times the duty to which they would be subjected if imported unwashed. The duty upon wool of the sheep, or hair of the alpaca, goat, and other like animals, which shall be imported in any other than ordinary condition, as now and heretofore practiced, or which shall be changed in its character or condition for the purpose of evading the duty, or which shall be reduced in value by the admixture of dirt or any other foreign substance, shall be twice the duty to which it would be otherwise subject.

Wools of the first class, the value whereof at the last port or place whence exported to the United States, excluding charges in such port, shall be 30 cents or less per pound, 10 cents per pound. Wools of the same class, the value whereof at the last port or place whence exported to the United States, excluding charges in such port, shall exceed 30 cents per pound, 12 cents per pound.

Wools of the second class, and all hair of the alpaca, goat, and other like animals, the value whereof, at the last port or place whence exported to the United States, excluding charges in such port, shall be 30 cents or less per pound, 10 cents per pound. Wools of the same class, the value whereof at the last port or place whence exported to the United States, excluding charges in such port, shall exceed 30 cents per pound, 12 cents per pound.

Wools of the third class, the value whereof, at the last port or place whence exported to the United States, excluding charges in such port, shall be 12 cents or less per pound, 2½ cents per pound. Wools of the same class, the value whereof, at the last port or place whence exported to the United States, excluding charges in such port, shall exceed 12 cents per pound, 5 cents per pound.

Wools on the skin, the same rates as other wools, the quantity and value to be ascertained under such rules as the Secretary of the Treasury may prescribe.

Woolen rags, shoddy, mungo, waste, and flocks, 10 cents per pound.

Woolen cloths, woolen shawls, and all manufactures of wool of every description, made wholly or in part of wool, not specially enumerated or provided for in this act, valued at not exceeding 80 cents per pound, 35 cents per pound and 35 per cent. *ad valorem*; valued at above 80 cents per pound, 35 cents per pound, and in addition thereto, 40 per cent. *ad valorem.*

Flannels, blankets, hats of wool, knit goods, and all goods made on knitting-frames, balmorals, woolen and worsted yarns, and all manufactures of every description, composed wholly or in part of worsted, the hair of the alpaca, goat, or other animals, (except such as are composed in part of wool,) not specially enumerated or provided for in this act, valued at not exceeding 30 cents per pound, 10 cents per pound; valued at above 30 cents per pound, and not exceeding 40 cents per pound, 12 cents per pound; valued at above 40 cents per pound, and not exceeding 60 cents per pound, 18 cents per pound; valued at above 60 cents per pound, and not exceeding 80 cents per pound, 24 cents per pound; and, in addition thereto, upon all the above-named articles, 35 per cent. *ad valorem;* valued at above 80 cents per pound, 35 cents per pound, and, in addition thereto, 40 per cent. *ad valorem.*

Bunting, 10 cents per square yard, and, in addition thereto, 35 per cent. *ad valorem.*

Women's and children's dress goods, coat linings, Italian cloths, and goods of like description, composed in part of wool, worsted, the hair of the alpaca, goat, or other animals, valued at not exceeding 20 cents per square yard, 5 cents per square yard, and in addition thereto, 35 per cent. *ad valorem;* valued at above 20 cents per square yard, 7 cents per square yard and 40 per cent. *ad valorem;* if composed wholly of wool, worsted, the hair of the alpaca, goat, or other animals, or of a mixture of them, 9 cents per square yard and 40 per cent. *ad valorem;* but all such goods with selvedges, made wholly or in part of other materials, or with threads of other materials introduced for the purpose of changing the classification, shall be dutiable at 9 cents per square yard and 40 per cent. *ad valorem: Provided,* That all such goods weighing over 4 ounces per square yard shall pay a duty of 35 cents per pound and 40 per cent. *ad valorem.*

Clothing, ready-made, and wearing apparel of every description, not specially enumerated or provided for in this act, and balmoral skirts, and skirting, and goods of similar description, or used for like purposes, composed wholly or in part of wool, worsted, the hair of the alpaca, goat, or other animals, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer, except knit goods, 40 cents per pound, and, in addition thereto, 35 per cent. *ad valorem.*

Cloaks, dolmans, jackets, talmas, ulsters, or other outside garments for ladies' and children's apparel and goods of similar description, or used for like purposes, composed wholly or in part of wool, worsted, the hair of the alpaca, goat, or other animals, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer, (except knit goods,) 45 cents per pound, and, in addition thereto, 40 per cent. *ad valorem.*

Webbings, gorings, suspenders, braces, beltings, bindings, braids, galloons, fringes, gimps, cords, cords and tassels, dress-trimmings, head-nets, buttons, or barrel buttons, or buttons of other forms for tassels or ornaments, wrought by hand, or braided by machinery, made of wool, worsted, the hair of the alpaca, goat, or other animals, or of which wool, worsted, the hair of the alpaca, goat, or other animals is a component material, 30 cents per pound, and in addition thereto fifty per cent. *ad valorem.*

Aubusson, Axminster, and chenille carpets, and carpets woven whole for rooms, 45 cents per square yard, and in addition thereto, 30 per cent. *ad valorem.*

Saxony, Wilton, and Tournay velvet carpets, 45 cents per square yard, and in addition thereto, 30 per cent. *ad valorem.*

Brussels carpets, 30 cents per square yard, and in addition thereto, 30 per cent. *ad valorem.*

Patent velvet and tapestry velvet carpets, printed on the warp or otherwise, 25 cents per square yard, and in addition thereto, 30 per cent. *ad valorem.*

Tapestry Brussels carpets, printed on the warp or otherwise, 20 cents per square yard, and in addition thereto, 30 per cent. *ad valorem.*

Treble ingrain, three-ply, and worsted chain Venetian carpets, 12 cents per square yard, and in addition thereto, 30 per cent. *ad valorem.*

Yarn Venetian, and two-ply ingrain carpets, 8 cents per square yard, and in addition thereto, 30 per cent. *ad valorem.*

Druggets and bockings, printed, colored, or otherwise, 15 cents per square yard, and in addition thereto, 30 per cent. *ad valorem.*

Hemp or jute carpeting, 6 cents per square yard.

Carpets and carpetings of wool, flax, or cotton, or parts of either or other material, not otherwise herein specified, 40 per cent. *ad valorem* ; and mats, rugs, screens, covers, hassocks, bedsides, and other portions of carpets or carpetings, shall be subjected to the rate of duty herein imposed on carpets or carpeting of like character or description ; and the duty on all other mats not exclusively of vegetable material, screens, hassocks, and rugs, shall be 40 per cent. *ad valorem.*

Endless belts or felts for paper or printing machines, 20 cents per pound, and 30 per cent. *ad valorem.*

## SCHEDULE L.

### Silk and Silk Goods.

Silk, partially manufactured from cocoons, or from waste silk, and not further advanced or manufactured than carded or combed silk, 50 cents per pound.

Thrown silk, in gum, not more advanced than singles, tram, organzine, sewing-silk, twist, floss, in the gum, and spun silk, silk threads or yarns, of every description, purified or dyed, 30 per cent. *ad valorem.*

On lastings, mohair cloth, silk-twist, or other manufactures of cloth, woven or made in patterns of such size, shape, or form, or cut in such manner as to be fit for buttons exclusively, 10 per cent. *ad valorem.*

All goods, wares, and merchandise, not specially enumerated or provided for in this act, made of silk, or of which silk is the component material of chief value, 50 per cent. *ad valorem.*

# LABOR TROUBLES IN PENNSYLVANIA DURING 1882.

The wisdom centered in organized labor, the numerous councils of those employing it, fail continuously to devise a method, or to adopt measures that will obviate or prevent the suspension of work in the production of our great industries. While the prejudices of the ignorant, and the selfishness of the avaricious, tend naturally to create divisions that lead to turmoil and trouble, the thoughtful, just, and upright must, from a counter instinct, labor for compromise, conciliation, and peace. These sub-divisions are found in all the ranks of both employer and employed, and while as yet the more considerate have been unable to stay at times the outbreak caused by the action of the less thoughtful, it can be but a question of time, when grievances will be adjusted by a system that must necessarily reduce the number of strikes. The gathered experience and results of past labor troubles have not convinced many of their folly, as they frequently, without proper consideration, when smarting under an alleged imposition, recklessly engage in their renewal. The labor associations, which should be the sanctum wherein all questions ought to receive thorough, calm, and deliberate consideration, are too often controlled by the more radical, who, by force of numbers alone, engulf themselves and their fellows into a sea of needless trouble. Gradually, however, the studious and more rational must advance as their opposites must decline, and with them the elements that give life and strength to these conflicts must cease.

The opening of 1882 gave promise of continued prosperity, and as men naturally feel inclined to better their condition, it was thought by the men employed in many industries that it was an auspicious time to secure an advance in wages. As the year advanced their hopes were not realized, but, on the contrary, the business in a number of industries languished to such an extent, that, in the estimation of the employer, demanded a reduction of wages. These several demands gave rise to a number of serious and protracted strikes or lock-outs. A brief sketch of the most prominent is herewith given.

### Lackawanna and Wyoming Coal Region.

The beginning of the year found the men of the Lackawanna and Wyoming coal regions all at work, and the majority at comparatively fair prices. Early in January, however, owing partly to the very mild weather at that season, and partly to the very great out-put of coal in the fall of the year 1881, prices of coal declined very materially. A general meeting of all the anthracite coal companies was held in New York, having for its object the control of mining, with a view to secure better prices. Accordingly, arrangements were made and agreements entered into, that the production of coal for the markets should be so regulated as to make it strong and active. In other words, a general advance in price was to be sought, and the mining so controlled as to produce the desired result. To carry out the arrangement agreed upon, most of the anthracite collieries in the Wyoming and Lackawanna valleys were put upon half time, or about three days per week. This state of affairs continued until about the first of June, 1882—a period of over four months—when coal having advanced in price from twenty-five to fifty cents per ton, the works were again started in full, and so continued until the end of the year.

During the season of half-work, there was much complaint and considerable uneasiness manifested among the working men. They met often when not at work, and quietly discussed the situation of affairs, until it at last resulted in a call for a general meeting of miners and workingmen, to be held at Pittston, Luzerne county, on April 28, 1882. The meeting was held, as per appointment, and was composed of miners, laborers, and others employed about the mines in the Lackawanna and Wyoming districts, extending from Carbondale to Nanticoke. Between two and three hundred representative men assembled in convention, and for hours discussed their troubles. Remedies of a varied character were suggested, even to that of entering upon a strike, but without coming to any conclusion, or fixing upon any special line of action, the meeting adjourned to meet at Hyde Park on the twenty-seventh of May. The principal topic of debate seemed to be, "How shall we support our families on half time at the present price paid for mining coal? If they cannot be supported in this manner, a demand must be made upon the companies for more work or an advance in the price." It was the prevailing sentiment, however, that no strike should take place until all other means had failed. What the result of the adjourned meeting at Hyde Park was, could not be definitely ascertained. The convention met with closed doors, allowing no outsiders to be present at their deliberations. Whatever their conclusions were, or whatever was agreed upon as to their future course of action, is not material, for shortly after this meeting the companies placed at their works the following notice: "On and after July 1, 1882, an advance of ten per cent. will be paid upon the present price of mining coal, this to include miners, and laborers, and other men employed in working in or about the mines." Whether the companies, in view of the manifest uneasiness of the men, and the prolonged agitation of affairs would produce a strike, and advanced wages to prevent it, or whether, in a fit of great liberality, they resolved to do something for the workingmen without their asking, is not generally known. But certain it was that the men got their advance, and that, too, before any formal demand was made for it.

On the eleventh of August, the drivers and runners of the various mines in and about Wilkes-Barre stopped work, without previous notice to the companies or operators, and, as was alleged, for the following reasons:

"That the miner and laborer could quit work as soon as they had filled the cars allotted for the day, and given a full day's pay, whether the work was done in six hours or in ten."

But the drivers and runners claimed that if the cars were filled and run out in six hours, they only received six hours' pay, and unless they rendered ten hours' actual work they did not receive a full day's wages. Hence, they resolved not to return to their work until the following terms were complied with: "A day's pay, when the cars were filled and run out, whether the work be done in six hours or ten, and no work until the companies so agreed." At first the miners sympathized with them, but not so with the laborers, who, taking a different view of the case, claimed that the companies were right, for the reason that the runners so crowded the cars upon them that they had to work unnecessarily hard to fill them with coal, for no other purpose than to enable the drivers and runners to get out of the mines a little sooner to spend their time in loafing and carousing, and at the same time receive a full day's pay for their work. The companies, it seems, had endeavored to discourge as much as possible the rushing of cars through the mines, to prevent accident and destruction of property, and, as a means to check the evil, decided to pay only for actual time worked. Meetings of the strikers were held at different times and places, and the matter in dispute discussed, with a view to prolong the struggle until their demand was complied with. On the 21st of August, 1882, Mr. Charles Parrish, of Wilkes-Barre, on behalf of the companies, submitted the following proposition: "A full day's pay when ten hours are worked, and three quarters of a day when seven hours only are worked." The men and boys at first were indignant at the proposition offered, and decided not to yield; however, upon further reflection and consultation, a settlement was effected on the basis of the above proposition, and the strike ended. The demands of the drivers and runners were probably, in part, justifiable, yet they made a serious mistake in not first presenting their case fairly to the operators, and seeking, by conciliatory measures, the proper redress. By so doing, a strike in all probability would have been avoided, and both men and companies saved a large pecuniary loss.

About the 15th of August the breaker boys of Warrior Run colliery (Luzerne county) struck for an advance of ten per cent. which they claimed they were entitled to, alleging that they had not shared in the general advance of July 1. After an idleness of about ten days the boys resumed work at the old rates. About the same time the men employed at Katy-Did, No. 2, and Red Ash collieries (Luzerne county) struck for the alleged reason that two men had been discharged because they belonged to the Knights of Labor. Meetings were held at different times, and several propositions were submitted on the part of the men and the companies, with indifferent success, until the 26th of August, when a compromise was effected and the men went to work. It was reported that the two discharged men were re-instated.

On the 4th of October it was reported that a strike among the miners of Ashley (Luzerne county) had taken place. The men of No. 6, it was said, had struck for back pay, then due them for nearly two months. It was also stated that the men at Sugar Notch colliery had followed the example of No. 6 for the same reason, but the rumor proved to be erroneous. It was ascertained, however, that a serious difficulty was threatened on account of irregular pay, but the trouble was amicably settled, the company agreeing to fix a regular pay-day thereafter.

On the 15th of November a strike of the miners employed at the Hartford colliery, in Ashley, and also at No. 9 and 10, Sugar Notch, occurred. The men complained that they were docked unjustly for the slate sent out with the coal. A meeting was held at Ashley on the 16th, resulting in the men resuming work, and were followed by those at Sugar Notch in a few days thereafter.

Thirty miners employed by the Thomas Coal Company, of Schuylkill county, on day wages, went out on strike July 26 for an advance of twenty-five cents per day. Their daily wages was two dollars per day. After three days it was settled by the company letting out by contract such work as could be so arranged, and an allowance to the others of five cents per day for oil.

A three days' strike occurred at the colliery operated by L. S. Baldwin. A demand was made for an increase of wages, which was refused, the men discharged, and new ones employed in their places.

In the early part of February the men employed by May, Audenried & Co., Shamokin, struck for an advance of ten per cent., but resumed work at the old wages after a week's idleness.

### Clearfield County.

The coal mined in what is known as the Clearfield region is shipped, principally, to the eastern markets. Here the operators are encountered by active competition from the sale of coal mined in the bituminous district of George's creek, Maryland. Both being competitors in the same market, the amount paid for mining would naturally enter largely into fixing the price of coal. The policy has been, so far as possible, to have the wages of miners uniform in these respective localities, but during the spring of 1880 this uniformity was disrupted, owing to the failure of the Clearfield miners to procure an advance of ten cents per ton, whereas the miners of the Maryland district succeeded in procuring an advance of fifteen cents per ton, thus making a discrepancy in favor of the latter to that amount. The character of the coal being identical, the labor almost similar, and the same market sought by each, it was not unnatural to suppose that those receiving the lowest rate of wages would claim, and, furthermore, exert themselves to obtain, the highest rates. To accomplish this result was a question that received the consideration of the thinking miners; but how to secure it was a subject requiring mature deliberation, more especially in view of the failure of the past year. To avoid mistakes, more likely to occur in the absence of any organization, it was deemed advisable to at once identify themselves with one, and, accordingly, they began to form local assemblies, under charters granted by what is known as "The Noble and Holy Order of the Knights of Labor," and rapidly grew in numerical strength. For obvious reasons, the proceedings were carried on strictly secret and confidential; but as secrecy seemed to be somewhat of a barrier to rapid growth and progress, it was cast aside, and the existence and principles of the order publicly proclaimed. During this period, there was a quiet, but ceaseless, agitation among the workers, which indicated that, sooner or later, a conflict would ensue. In the absence of organization, labor is liable, at times, to assume an extreme and violent course, but with an organization effected, the agitation, as a rule, is conducted in a more moderate and conciliatory spirit. One of the first movements made was a demand to have check-weighmen reinstated at the "banks," in accordance with the privileges conceded to them prior to their previous strike, but since denied them. This demand was, in a number of instances, cheerfully complied with. Following this, a movement was made, having in view the adjustment of weight in coal, making two thousand pounds of coal, instead of two thousand two hundred and forty pounds, a lawful ton. In this effort, great reliance was placed upon an act of Assembly, entitled "An act fixing the standard weight for a bushel of bituminous coal in this Commonwealth," approved May 18, 1878. This act, while making it a misdemeanor on the part of any person or persons "to attempt to fix or establish" any other than seventy-six pounds to the bushel, made no such provision as regards two thousand pounds being deemed the only lawful ton. Hence, the law was of no avail, and deeming it injudicious to attempt to enforce its provisions by means of a strike, action, for the time being at least, was postponed.

By this time the long-anticipated movement among the Cumberland, Md., operators to reduce the wages of their employés to a level with that paid in Clearfield county became evident, and the miners in the latter district became aroused to a sense of duty towards their co-workers, with whom they held common cause. They virtually admitted that if they failed to take a decided action towards bringing about a uniformity of wages upon the highest basis between the two districts, there would be a natural tendency to reduce them to the lowest point. That if the wages of the miners in the Clearfield district were not advanced, a reduction in the rival district seemed almost certain. Considerable discussion ensued throughout the entire district, when, after mature deliberation, the following was agreed to:

"*Resolved*, That a demand of fifteen cents per ton should be immediately sought. That circulars, embodying the demand, should be printed, and forwarded to the superintendents of the various mines, and a reply requested on or before the 15th of April, 1882."

In accordance with the foregoing, a circular was issued, as follows:

"*To the Coal Shippers of Clearfield Region in general, and to . . . , Superintendent of . . . . Colliery, in particular.*

Sir: We, the miners, employed at your mines, and known as . . . , think that in accordance with the present demand and price paid for coal in market, we are entitled to an advance of fifteen cents per ton for mining, and other work accordingly. Therefore, in order to peaceably adjust this question, we have appointed the following committee of five to act in our behalf; Chairman, Andrew D. Farm, Phillipsburg, Centre county; C. B. Shoutz, Isaac Lancy, William Duggan, and John W. Jones. If you are satisfied to appoint a committee of the same number, by addressing the chairman of our committee, and stating time and place of meeting, they will meet you there, and we are satisfied to abide by their decision. By this means we can avoid the loss of an hour's work, and arrive at a peaceable understanding. We expect an answer from you by the 15th of April, whether you will appoint a committee to discuss and settle this question, or concede to our request."

As to whether this circular would meet with favor or condemnation there was a great diversity of opinion, and what action the miners would take in case of a refusal to agree, was a question upon which predictions were numerous and varied. The announcement that a mass meeting would be held on Monday, April 17, in the vicinity of Phillipsburg, to hear reports, created grave apprehension as to the result, for it was feared, that in the event of unfavorable replies to the circular, a general strike would at once be declared. From the reports which were received, it was learned that in many instances no reply was, or would likely be given, while in many others the superintendents had verbally given answers, which, to say the least, were very indefinite. At this meeting, Miles McPadden, of Pittsburgh, Grand Organizer of the Knights of Labor, made his first public appearance in the district, and delivered an address. His advocacy of the alleged theme of the order—conciliation and arbitration—did much to postpone the declaration of a strike. He pointed out, in a forcible manner, the folly of labor, in a disorganized state, entering into conflicts with organized capital. He counselled the workmen to become solidified in the organization he had the honor to represent, and before resorting to any hostile plan, such as a strike, to make further efforts in the way of a conciliatory settlement. Thus it was that they resolved to take no immediate steps to enforce their demand, but to direct their efforts in getting the district thoroughly organized, and in the meantime keep up the agitation. In the weeks immediately following, there were large additions made to the membership of the various local assemblies. The operators manifested a hostile feeling against the men, and particularly those that had allowed themselves to act as representatives of their fellow-workmen on the committee proposed to settle the difference. Some were ordered to "square up" and quit their employment. This was regarded by the men as an outrageous attack upon them, and gave evidence of a determined attempt to crush the organization in its infancy. It seemed to cement them with a closer and more compact union, and instead of checking the desire of obtaining an advance, served only to intensify the agitation, and bring on the renewal of the recent demand for increase of wages, earlier, probably, than otherwise it would have been. Another counsel or convention of delegates was held on the 17th of May, at Houtzdale. The whole situation was there discussed at length, and it was finally resolved to renew the claim for an advance in wages, and issue the following circular, presented by the secretary:

"*To the coal operators of the Bituminous coal region of Clearfield and Centre counties, and . . . . in particular:*

We, your workmen employed at . . . mine, respectfully submit to you the following:

Viewing the fact that the common necessaries of life, rent, and other matters affecting our earnings are so enhanced, and taking into consideration the fact, also, that we have for the last two years suffered our wages to be fifteen cents per ton less than paid in the Maryland region, we would now ask you most decidedly to concede to us an advance of fifteen cents per ton. We make this demand believing we are justly entitled to it. We would that you no longer sway your right against our might, but that you deal with us honorably. We would that you bear in mind that we are men desirous of kindling a good feeling to the interest and mutual advantage of both you and ourselves; we would therefore pray you not to impose upon us any longer, but that you will declare your willingness to grant the said advance henceforth or agree to a second request from us that the whole matter be submitted to '*arbitration*.' Your servants bearing this request are fully empowered to pledge us in favor of abiding by the decision of such a tribunal. We would that you entertain this in the same conciliatory spirit as it is laid before you. We trust you will honorably deal with us, and bear in mind that a harsh, inhuman reply cannot other than provoke anger and revenge sooner or later.

Please acquaint bearers with your decision on the matter.

We are your workmen.

*May 17, 1882.* AT . . . . MINE."

The tone of the above circular was favorably commented on by some, others deemed it too feeble a presentation of the workmen's claim, while by many it was considered a wise departure from the old policy of bidding absolute defiance. The workmen were prepared to admit that they had no statistics on hand by which their case could be fully set forth, but they believed that if their employers would agree to submit the whole matter to arbitration, that such evidence, through mutual deliberation and friendly intercourse, could be, by each of them, furnished that would definitely prove the ability or inability to pay the advance sought. They further claimed that inasmuch that capital on the one hand and labor on the other were joint and twin factors in production, they were entitled to a respectful hearing, and their case presented before a tribunal composed of a given number of men of their own choice, they to mutually agree with a similar number of operators. They manifested an anxiety to effect an understanding that would serve as a basis upon which their wages should be governed, and upon which could be easily computed the rates that should prevail when market prices were high or low, and thus share the advantage of good times as well as bear their proper proportion of the burdens of bad times. Deputationsa waited upon their respective employers and submitted to them the circular, but only in a few instances did they receive consideration. In a number of places, the men presenting the circular, were ordered by the officials to "square up" and quit the employment, while those who received them considerately allowed them to continue at their work. It was said that Mr. A. G. Spears, superintendent for Whitehead & Co., met the deputation in the most creditable and courteous manner.

On the 1st of June a large and enthusiastic mass meeting of the miners of the whole region was held near Houtzdale to deliberate and decide what course should be taken in view of the demand not being conceded. The views and sentiments expressed by the different speakers were very conflicting, and it was evident that there was a lack of harmony and unanimity. After protracted deliberation the following resolutions were adopted:

*1st.* "That one more attempt be made to form a board of conciliation and arbitration as a medium by which the present and all future wage differences shall be amicably adjusted; that the Coal Exchange of Philadelphia be notified to this effect, and a reply thereto be requested on or before the 10th inst.

*2d.* "That five persons shall be elected, to form on the part of ourselves, the proposed board; that the persons elected shall draw up a manifesto of our case and submit the same to the Exchange. and that it be also published in the Philadelphia *Times* and other papers.

*3d.* "That the whole matter be left in the hands of our representatives henceforth to take such steps and bring about the dispute to the best issue possible."

The following persons were elected. and received the unanimous vote of the meeting: Richard Lloyd, George Maxwell, and John Santrock, of Houtzdale; Cornelius Cotter, of Osceola Mills; and John L. Lewis, of Phillipsburg.

With the understanding that another mass meeting would be held on the 15th, when final action would be taken, the large assembly dispersed.

On the evening of the following day the representatives selected by the men met for consultation, and, after choosing officers, resolved to advise their constituents that the mass meeting proposed to come off on the 15th should be postponed until such time as they would be able to submit a report upon the results of their efforts, giving assurance that all should be done as satisfactorily and expeditiously as possible. The secretary was instructed to draft a manifesto and submit the same to the consideration of the council on the 6th inst. Upon the re-assembling of the council, or committee selected by the miners, the secretary submitted the following for their consideration:

"*To the operators and shippers of the bituminous coal region of Clearfield and Centre counties, Pa.:*

GENTLEMEN: In pursuance with the resolution of a mass meeting held at Houtzdale, Pa., on the 1st day of June, 1882, permit us, by virtue of our election as arbitrators on behalf of our fellow-men, to address you. It is undoubtedly a fact known to you that since the 10th of April last we have repeatedly put forward conciliatory efforts to arrive at an amicable settlement with the superintendents at the various mines upon the question of an advance in wages. *Twice* have we issued circulars embodying our demand, and praying for an audience to discuss the matter; have declared our willingness to submit the whole question to a board of conciliation or arbitration, and have pledged ourselves to abide by the decision of such a tribunal. In fact we have left no effort untried to come to some reasonable settlement *with your representatives* upon the question, hence we have come to the conclusion to appeal and address ourselves DIRECTLY TO YOU in full confidence that we shall at least have a hearing.

Being loath to believe that you, as a body comprising the Coal Exchange, have any hand in refusing so moderate and reasonable a request, our constituents assembled at the mass meeting referred to above, *once more* resolved 'that another attempt be made to form a board of conciliation or arbitration with a view to bringing about a peaceful settlement of the question of an advance; that the Coal Exchange of Philadelphia be notified and respectfully solicited to elect five persons to meet the undersigned committee at any specified time and place to be announced by your exchange, and that by virtue of the unanimous vote of said mass meeting the undersigned are invested with full powers to bring the wage question to the best issue possible.' It was further resolved 'that we request a reply on or before the 10th inst.; that a copy of this *manifesto* be addressed to Daniel Brittain, Esq., president of the Coal Exchange, and be published also in the Philadelphia *Times*.'

Now, we wish it to be clearly understood, that if the time given above is too limited to enable you to furish us with a reply, we will, upon being notified to that effect, cheerfully extend the time, providing you notify us that you will submit our request to the Exchange for consideration, and that a reply be forthcoming not later than the 17th inst. We sincerely trust, that in order to restore peace and tranquility throughout the region, establish mutual confidence, kindle a good feeling, and do away with the possibility of involving the region in disastrous strikes and lock-outs, you will entertain our appeal, and grant us a hearing.

We are not the men, we assure you, to *insist* upon an *unreasonable* demand. We are willing and prepared to talk matters over in a peaceable and friendly spirit. *We do not believe in impossibilities.* We know and will admit, that there are two sides to all questions, and that there is a *possibility* of trade and prices being such as not to warrant our demand of fifteen cents a ton advance; but we *do* ask to have such matters laid clearly before us, and if such is the real state of affairs, you will have no difficulty in justifying a refusal. If, on the other hand, this cannot or will not be done, can the miners or we, as their representatives, be held responsible for the result? Does not reason suggest the advisability of conceding to the principle of conciliation or arbitration? If, on the one hand, the men of this region (by reason of being ignorant of facts bearing upon the question at issue,) are led astray by false ideas, entertain erroneous notions, and base their demands upon an unwarrantable foundation, and the operators and shippers on the other hand, by reason of greater knowledge, more extensive experience, and nearer intercourse with the trade and commerce of the world, stand aloof, and blankly refuse to meet, enlighten, and explain those matters to their employés, will they not be, to a great measure, (if not wholly,) answerable for the result? The reply cannot be other than in the affirmative; hence, we would *impress* upon you the importance of the issue involved in your reply.

In conclusion, we will add that our sole aim and object in requesting conciliation or arbitration, is to secure, on the one hand, and admit on the other, the rights and privileges of both parties concerned—to try and harmonize in a friendly manner our respective interests—in a word, to establish reason a substitute for force.

Will the coal operators and shippers of the bituminous mines of Clearfield and Centre, refuse the adoption of this principle? We anxiously await the reply.

We are yours respectfully,

Jno. Santrock, *Chairman.*
Cornelius Cotter.
Richard Lloyd.
George Maxwell.
Jno. L. Lewis, *Secretary.*"

Phillipsburg, Centre county, Pa.,
*June 6, 1882.*"

The above was approved and adopted by the men's council, and the secretary was further instructed to forward copies of the same to the parties designated, which was done. The council waited patiently for a reply from the president of the Exchange until the 21st, when they again assembled and resolved to fix a day for the postponed mass meeting. Circulars were drawn and issued, stating that it would be "held at Osceola, on Saturday, June 24, when all should attend, to hear the result of the effort at arbitration, and come prepared to assist in arriving at a *final* decision," &c.

Before noon, on the day appointed, Osceola was crowded with people. The miners of Phillipsburg came in a body, headed by a brass band, and carrying banners inscribed with mottoes, such as "Conciliation and Arbitration," and "We are free-born men, *Not Slaves.*" The gathering on this occasion was not so large as the former meeting at Houtzdale, but it was claimed to be more representative. After the usual preliminaries, the president asked for a report from their council or committee, when in reponse, the secretary read the following:

**"The Arbitration Committee's Report to the Miners of Clearfield District.**

FELLOW-WORKMEN: What has been done by your representatives toward bringing about a peaceful settlement and solution of the long-pending wage difficulty, is a matter in which you are interested and deeply concerned; and we, as your council, are none the less deeply moved at the result or non-success of our efforts. You are well aware that, by virtue of our election as arbitrators on your behalf, and the resolution investing us with full powers to take all necessary steps henceforth to bring the matter to the "*best issue possible*," that the first movement we made, after due consideration, was to postpone the mass meeting to have been held on the 15th instant, until the 24th. This we deemed necessary and expedient in order to bring the matter to the "best issue," and we will add that we considered ourselves justified, from a view of all the circumstances bearing upon the movement and the spirit of the resolution adopted by last meeting, in so doing. It was your interest that actuated us in taking this step. We felt, and still feel, satisfied, in our own minds, that you have no desire to rush into a strike, if, by any means, such a deplorable occurrence can be avoided; hence, it was our desire and aim to extend every available chance to the Coal Exchange to consider the matter and come to terms.

We had hoped, and, to a high degree, had entertained the conviction of mind, that the gentlemen comprising the Coal Exchange would have sufficient manhood about them to at least consider our reasonable petition for conciliation or arbitration, and favor us with a reply. But we are reluctantly obliged to confess that we have been grievously disappointed. Nevertheless, we feel that OUR case, in the eye of the public, is to-day so much the stronger, and deserving the sympathy of the community at large. We have proven to the world that we are peacefully disposed, are rational in our conduct, considerate in our actions, and ask for nothing but FAIR DEALINGS. We feel that we have removed from your shoulders, as our constituents, the grave responsibilities and disastrous consequences which a strike conceives, and have placed at the very doors of the operators and shippers the responsibilities of such a lamentable occurrence.

Had we not extended the time at first given, they *could* have come upon us with the excuse that the time given was too limited to enable them to consult each other and effect a settlement; but as matters now stand, we have undermined such excuses, and, hence, we trust you will see the force of our action in deferring the mass meeting until this day. Whether this explanation is satisfactory or otherwise, you will have the opportunity of expressing yourselves at the close of our remarks.

Our second movement was the drafting of a letter, or *manifesto*, embodying the sentiments and resolutions of our meeting at Houtzdale, and forwarding copies of the same as per instructions.

This we deemed an important matter, and every precaution was taken to avoid giving expression to a single word of an offensive character. We drew it up in so moderate and logical a tone as our mental abilities would enable us to do. Our ruling desire was to win our employers over by fair means, and thus avert hostilities. How far we succeeded in drawing up the *manifesto* in this spirit, we leave it for you to judge, which will be again read in your hearing. Copies were forwarded to the president of the Coal Exchange. but no reply has been received.

Fellow-men, this being the case, you have but one of two courses to decide upon, and you should at once come to a final conclusion of the matter. You have either to enforce your claim *conditionally* or surrender *unconditionally*. This is a matter for yourselves to decide. In coming to a conclusion upon this point we would that you weigh well all the issues at stake. Consider, on the one hand, your own position and pecuniary circumstances and on the other your *duty* to yourselves and your co-workers in Maryland, who are this day in a struggle with their employers, the result of which will effect this region *directly*. Will you arise to their rescue and save yourselves? We must face the fact honestly that we are this day aiding the shippers of Baltimore and Philadelphia in their defeat. How far can we afford to ignore this fact as men who hold "*the concern of one to be the concern of all?*" Can we afford to see our Maryland brethren defeated? Can we afford to have our manhood questioned, and the last spark of independence to be extinguished? And are you prepared to surrender yourselves to the will and mercy of operators, who, after having been asked in so humiliating a tone, as refused to even acknowledge you as men? Can you afford, consistently, with your rights and privileges as free-born citizens, to be deprived of your freedom and denied the right of a voice in the sale of your labor? Will you allow your posterity to fall into a state of servitude through your neglect? Shall it be said of you that you are men with just enough of brains to know you have rights but not manhood enough to maintain them? Equal rights were bought for all with the blood of our ancestors—the noble heroes of our great republic! And are not those rights too sacred to be trampled upon? Those are questions that have a direct bearing upon the point at issue, viz: the *unconditional* surrender of our claim, or its *conditional* enforcement. You have exhausted all conciliatory means of settlement, and you have no alternative left but the two courses mentioned. To a certain extent you have already declared a *conditional* surrender, in the fact that you have pledged yourselves as willing to submit if trade and prices are such that will not warrant the demand. But this has not been favorably received, hence you are compelled to face the inevitable.

Then what can be done, from a view of all the circumstances bearing upon the case, is the question which should be uppermost in your thoughts whilst forming your decision. And how to come out of the difficulty honorably, and uphold the rights and dignity of labor, is a matter of no less importance. The question at stake is not so much one of dimes and dollars, but one of principle, viz: the right of a voice in the sale of our labor; the right of driving one side of the bargain; the right of a voice in the fixing of such a price upon our day's labor as will enable us to maintain our families respectable, as well as the operators to fix such a price upon the ton of coal that will enable them to secure a fair profit on the capital invested. It is simply the concession of this principle that we have asked, and still contend for. But the treatment it has received reminds us of that phrase, "man's inhumanity to man makes countless thousands mourn."

Now, in conclusion, we trust we have laid the situation clearly before you, and by our remarks have led your thoughts into the proper channel to arrive at a final and unanimous decision upon the matter; that we have by no means abused the confidence you reposed in us, and that your decision this day will be such as you will not have cause hereafter to regret.

We are your obedients servants,

JNO. SANTROCK, *Chairman*,
CORNELIUS COTTER,
RICHARD LLOYD,
JNO. L. LEWIS, *Secretary*."

*June 24, 1882.*

The sentiments expressed in the report were concurred in by the larger portion of the men, and a resolution was adopted: "That this meeting express its satisfaction with the arbitration committee's report; fully concurring with the sentiments therein, and with a view of endorsing the same, that a committee on resolutions be appointed." Messrs. Lewis, Cotter, Thomas, Bailey, and Trevesick being appointed, subsequently submitted the following:

"WHEREAS, The *third* effort at conciliation or arbitration has been a failure, and our demand been totally ignored by the coal exchange: *And whereas*, Such contemptible treatment has a direct tendency to reduce the miners of the region to a state of servitude; be it

*Resolved*, That the miners of Clearfield district, this day in mass meeting assembled, instantly cease work *until such time as the operators and shippers concede to the principles of conciliation* as a means of settlement.

*Whereas*, And in view of the fact that our Maryland bretheren declare themselves anxious to make *our* cause *their* cause, and will act in conformity with us; be it

*Resolved*, That the miners of the region make the cause in both regions one and the same, both regions to act together; the settlement to be effected to be a *joint* settlement on the *best possible terms.*

, *Whereas*, And in view of the fact that Maryland region has submitted the whole question for all future procedure to the executive board of the "Knights of Labor;" be it

*Resolved*, That this region submit the case to the same tribunal with a view to concerted action—it being understood that the executive shall grant such powers, &c., to the district assembly as deemed expedient, and that the whole matter be left in their hands.

*Whereas*, The Legislatures of the past have neglected to provide laws giving equal rights and priviledges to rich and poor alike; be it

*Resolved*, That a political convention be held at Clearfieldtown on Saturday, July 15, 1882, to take measures and decide upon a labor candidate for the next Legislature, each "local" or locality to send representatives thereto."

The resolutions were declared adopted. It was observed, however, that a few had abstained from voting, and it was learned that their reason for so doing was that they did not believe that the meeting should decide finally owing to the absence of a very large number of their fellow-workmen. That a great many were absent was admitted, but it was contended that they had been notified to attend, and should have done so. Hence, the vote of the meeting was pronounced valid, and a cessation of labor declared "until such time as the operators and shippers would concede to the principles of conciliation as a means of settlement. This meant *another strike.*"

The strike having been inaugurated, the workmen deemed it advisable to inform the public as to the cause. The district assembly, composed of nine local bodies, met and adopted the following:

## "IN A STRUGGLE FOR LIFE."

## "A BRIEF EXPOSITION OF FACTS RELATIVE TO THE STRIKE."

"*To whom it may concern:*

The chief cause of the existing trouble between the miners and operators of this (Clearfield) region is the refusal of the latter to submit the question of fifteen cents per ton advance in wages to a joint board of conciliation or arbitration for settlement. The bone of contention is the arbitrary manner and the contemptible spirit in which the large majority of the operators have treated the request. The miners maintain, in the first place, that they have a right to a voice in the sale of their labor. That in the development of those two great functions—capital and labor—there is a mutual enterprise, and that by virtue of such, wages as well as profits should have due consideration. That it is as much to the interest of the operators themselves to establish a permanent board of conciliation or arbitration, a medium by which this and all future differences may be fairly and amicably settled. The men are determined to make "strikes" a relic of the past, and have reason established a substitute for force. Is this not a principle which will command the sympathy of the public at large? Is it not time that right and not might should govern the actions of employers towards their employés? If you admit the principle to be upon the code of reason and justice, then we ask you to aid us by all and every possible means to crown our efforts with success. If by your hearty good will and liberal aid the principle of conciliation shall ultimately triumph, strikes in the future will be impossible, and, as a result, the public and the community at large will rest in peace—the interest of employers and employed will be so harmonized as to secure the lasting prosperity of the entire region. We want it to be understood that no person or party regret the strike more than ourselves, but it has only been resorted to after every conciliatory measure has failed. The strike has been forced upon us, and now that we have entered upon it—deplorable as it is—we feel confident that if all the legions of Tophet conspire against us, our cause being just, it must eventually triumph. God protect the right.

DISTRICT ASSEMBLY, NO. 40, KNIGHTS OF LABOR."

The circulation of the above was intended by the men to counteract the prevailing impression that they were on strike for no other object than an advance of fifteen cents per ton, and that nothing less would settle the matter. They claimed that from the first the main question was Conciliation and Arbitration, or a recognition of the workmen's right to have a voice in the sale of his labor. This was, they said, the primary object sought for—the matter of percentage in wages being of secondary consideration, and to be decided by mutual deliberation and consent. This view of the trouble the operators could not understand, or, at least, would not entertain, but contended that the organization of the Knights of Labor had resolved upon "running their business." There appeared to be a slight misunderstanding upon the part of some, with regard to the powers conceded to the executive board of the Order. The resolution on this matter was not clearly defined, and it was construed by parties opposed to the Order as taking away entirely from the district the power and right to settle, and placing the men themselves in a subservient position. This idea was repugnant to the feelings of workingmen who were not connected with the organization. and indicated a division among them. The diversity of opinion upon this point, brought together the leaders and members of the District Assembly at Osceola, on the 27th, when an understanding was fully established, "that full powers to negotiate and settle the dispute, shall be vested in the following persons, acting in the capacity of arbitrators: John Paisley, of Osceola; John Santrock, David H. Thomas, James White, of Houtzdale, and John L. Lewis of Phillipsburg"

This information was imparted to the executive officers, and by them indorsed.

On the afternoon of the same day, a mass meeting was announced at Houtzdale, by some parties, apparently with a view of trying to reverse matters, and in view of the misunderstanding so prevalent, it was deemed advisable that the meeting should be made acquainted with the understanding arrived at by the District Assembly. It was resolved that Messrs. Lewis and Cotter should proceed there upon that mission. The meeting was large, enthusiastic, and well conducted. The secretary announced the understanding arrived at that forenoon, and submitted the same for approval or disapproval, when, by a unanimous vote, the whole was confirmed. The secretary also announced that he was in receipt of a communication from Messrs. W. & H. Barlow, operators of the Colorado mine, Phillipsburg, stating that they were willing to meet the workmen's committee, and try to bring about a settlement, which was hailed with great satisfaction. After resolving to continue the struggle, the meeting adjourned.

On the 29th, the employés' representatives interviewed the Messrs. Barlow, at their office, in Philipsburg, and, in the course of a few days, had a second conference, at which both parties freely exchanged views on the situation. Messrs. Barlow stated that they were anxious to have their colliery in operation, but that they were not able just then to pay more wages; that they were, however, in favor, and would agree to a proviso, making fifty cents per ton (the existing rate) the minimum wages, with the further understanding that when the selling price of coal exceeded one dollar per ton, on the railroad cars, they would agree to share the advance with their workmen. They had seen this principle applied and witnessed its operation in the Schuylkill region, and were in favor of adopting a similar method to regulate affairs here. They concurred with the view that such a system could be advantageously adopted, both to the interest of employer and employed, and expressed their regret that other operators did not seem to entertain the same views. Being a small firm, they were at a disadvantage, they said, in competing with the large companies, who, to a great extent, were monopolizing the markets; hence, they were unable to pay more than the hitherto-existing rate. The men, on the other hand, explained that they were empowered to negotiate and arrange only with the operators as a body, and could not bargain definitely with individual firms; that it would be impracticable to effect an understanding with one firm, fearing, possibly, a different agreement might be made with another firm, which diversity would tend only to complicate affairs, and end in confusion and failure. They highly appreciated the sentiments and suggestions made with a view to adjusting the difficulty, and regretted that other firms did not do likewise. They expressed themselves as satisfied that if the operators of the whole region would consent to entertain them in the same friendly spirit, and manifest such an earnest desire to mutually adjust matters, that a peaceful and satisfactory settlement would be the result; and, to this end, they en-treated Messrs. Barlow to intercede with other operators, with a view of bringing about coöperative action, being assured that all within the men's power should be exercised in favor of adjusting equitably the differences existing. Thus the interview closed.

The large body of operators paid no heed to these demands or appeals, but turned their attention to disrupting the organization, frequently manifesting a hostile disposition, by ejecting tenants from their dwellings, and retaining wages due in lieu of rent, store orders, &c., and then directing their efforts in bringing other workmen to substitute for the old hands. Agents were dispatched hither and thither to engage men to come into the region, every effort being made to insure success. Among the most active in this direction were the Morrisdale Coal Company, the Victor Coal Company, and the Webster Coal Company. A number of laborers were secured in New York, but, upon learning how matters stood, refused to enter the mine. The largest proportion, however, went to work, being carefully guarded, while at their labor, by the officials of the companies and the officers of the law. Fearing intimidation or molestation when not at work, they were forced to confine themselves within the narrow limits of their own association. There did not, however, appear any just grounds for such apprehension, for, as a rule, the old hands looked upon them as victims of false representations, more than that of deliberate "black-legs," intent upon despoiling the old hands of their work and wages. That some, at least, were persuaded thither upon representions that afterwards proved untrue, is evidenced from affidavits sworn to by them. These affidavits, furthermore, exhibit to what straits even operators will go in an effort to carry their points; efforts, while justified, possibly, within the pale of the law, are, in and of themselves, scarcely worthy of commendation by the thoughtful and just.

One, Oscar Witsche, when sworn before Justice of the Peace Gallagher, at Osceola, testified that "He was a sailor," and noticing an advertisement in a New York paper, applying for two hundred men to work in a coal mine in Pennsylvania; and upon application to the agent, was taken in charge along with others, and conveyed to the Victor mines, at Phillipsburg, where they were to work. They were guarded by police on their arrival at Tyrone, which caused a suspicion that all was not as it should be, and upon reaching the mine it was admitted that a strike was in force. They were informed that they could make from sixty to seventy-five dollars per month, and that a new suit of clothes should be given to each of them. Eight of the number, upon consultation, declined to go to work, and resolved to leave. The affiant went to Phillipsburg, without means of support and but little assistance, and on the 18th of July was arrested on the information of policemen, as a tool in the hands of Mr. McPadden and others, which the affiant positively denied. On the third day of his incarceration in Clearfield jail, he was approached by a policeman, and informed by him that if he would leave the region he would be released, and transportation furnished to where he desired to go. Upon his release he was proffered a ticket to Pittsburgh, but nothing to meet his wants on the way. And upon a second application the fare was refused, and he was compelled to tramp his way back to New York, from whence he came, having to beg his way."

"Two persons that were brought with a party from Shamokin to Morrisdale, also make affidavit that they were working on a new piece of railroad, and were induced to go by flattering promises; they at first declined, owing to the fact that they had money coming to them which they would forfeit by leaving their work. But the agent insisted upon their immediate departure, that he would get their accounts and pay them on the cars. When they got on the train he showed them the money, but deferred paying until they arrived at their destination; and furthermore, informed them that there was no strike, and refused to pay them on their arrival."

During the pendency of the trouble, on the 13th of July, Mr. Miles McPadden, of Pittsburgh, accompanied by a few friends, proceeded to Morrisdale to address a meeting of the striking miners in that section. Arriving there shortly after mid-day, he was followed by officials to the place where he was to speak. Judging their mission to be a hostile one, and that their special purpose was to arrest him, if circumstances would warrant, he concluded, he says, to confine himself to the situation of affairs politically. Upon the evening of the same day a warrant was issued for his arrest, for "intimidation and threat" at Morrisdale, and he was at once taken before a justice of the peace, and bound over, under one thousand dollars bail, to answer to the charge at September term of quarter sessions. A few days thereafter, he was again arrested at Houtzdale, being with others charged with "conspiracy and unlawful assemblage." The charge made was as follows.

"Thomas E. Clarke, of Osceola Mills, in said county, (Clearfield,) acting as agent for Daniel Brittain and others, being duly sworn, deposeth and saith: That one, Miles McPadden, not being a resident of Clearfield county, nor a practical miner, as deponent is informed, came to said county about May 1, 1882. That then the coal region was at peace, and no strike was talked of, and miners were content with wages paid. That said McPadden, acting with Cornelius Cotter, and others to deponent unknown, one John Paisley, William Duggan, P. F. Donelly, and Thomas Bailey, began in May aforesaid, to hold public meetings of miners in Woodward and Decatur townships, and Osceola and Houtzdale boroughs, with the avowed purpose of organizing said miners for the purpose of an advance upon their wages then paid them by their employers, coal miners, and operators. That such organization was made in pursuance of such meetings and speeches of McPadden, Cotter, and others; and a number of said miners were induced to enter into the same, by the agency and active efforts of McPadden and others. That when so made, the organization was used by them for the purpose of an organized strike among said miners, and a demand by them for increased wages. That in pursuance of such action, and as a result of such combination and action, an organized strike of miners has been had, and large numbers of men have ceased work in the mines in said county, in pursuance of the orders of such organization, although they themselves voted against such strike. And many miners, not members of the same, have also ceased work, because of the intimidation following from such large numbers of their fellow-workmen having ceased work, and exercising influence over them by threats, silent menaces, and otherwise. That many men wish to work, and by the action, conduct, threats, menaces, and intimidation of numbers by said McPadden and others hereinbefore named, with others unknown, they fear to do so. That men assemble in masses at points at which peaceable men, who wish, are at labor, and intimidate them by their presence, their threats, and their demeanor.

That deponent and others, in endeavoring to protect persons who desire to work, have been interfered with, stones and clubs thrown, and menaces and threats made to prevent the same, and that pistols have been fired at the houses of men who were at work, and other overt acts tending to breach of the peaee committed. All of which are the direct results, as deponent verily believes, of the conduct, action, combination, and conspiracy organized and entered into by the said Miles McPadden, Cotter, and others hereinbefore named, and that the purpose, and direct result of said organization, and of their behaviour, is to hinder many persons who desire to labor for Daniel Brittain and others, their employers, from doing so, and to hinder and prevent other persons as being employed as laborers in the mines aforesaid.

THOMAS E. CLARKE.

Sworn and subscribed the 15th day of July. A. D. 1882.

P. GALLAGHER,
*Justice of the Peace.*"

Under the above indictment McPadden had to enter further bail of one thousand dollars and the other parties five hundred dollars each. Two days later further arrests were made at the instance of John Graham, representative of the Victor Coal Company, acting as agent for Daniel Brittain and others. The indictment was the same, and the victims were Timothy Fox, Oscar Witsche, (the latter having come into the district from New York,) Andrew D. Farms, and John L. Lewis, of Phillipsburg. The two former, in default of five hundred dollars bail, were lodged within the walls of the county prison, and the two latter entered bail in the sum of one thousand dollars each. The arrests caused quite a sensation. The defendants, however, were not apparently alarmed, believing that under all the circumstances they had committed no overt act, and that, consequently, the charges were groundless. Messrs. Murray and Gordon of Clearfield, Colonel Hastings of Bellefonte, and Jenks of Jefferson county, were engaged as counsel by the defendants. They were to be tried at the September term of court, but at the request of counsel for the prosecution, and against the expressed wishes of the defendants, the trial was postponed to the January term, 1883. In the January term they failed to prosecute, their attorney entering a *nolle prosequi*, and the defendents were discharged.

By the 26th of July the operators had, by defection in the ranks of the miners and the introduction of men from abroad, succeeded in putting their mines into operation. Those who had waged the contest from the miners' side, considering themselves vanquished, gave up the struggle, and each sought work wherever it could be obtained upon the old terms and conditions.

## BITUMINOUS COAL FIELDS.

### Pittsburgh District.

By referring to the last report of the Bureau it will be seen that the miners employed at the works of the Waverly Coal and Coke Company, at Smithton, on the Baltimore and Ohio railroad, had been on strike from the 26th of November, 1881, to the 21st of January, 1882, against signing a personal service contract, or, more properly, a scale of wages. As this contract system of mining bound the signers not to enter a strike under sixty days' notice, the Miners' Association for a number of years, whenever it undertook generally to advance wages, or in any other way attempted to ameliorate the condition of its members through united action, found this contract always in its way. No matter how desirous they may be, the Waverly miners, by the terms of the contract, were deprived the privilege of joining in the struggle. This had often been experienced, and, consequently, when the Waverly miners evinced a disposition to throw off " the contract " the miners all over the district, and their officers, took a warm interest in their effort. The system adopted by the company was vigorously assailed by the officers in the columns of the *National Labor Tribune*, and the contract itself was the target for weekly comments and criticisms, somewhat tinctured with irony

The quality of the Waverly coal was termed by them "Lignite" as descriptive of its inferiority. The men during their struggle were supported by what funds the officers of the Miners' Association could assign them, and, to speak comprehensively, the *Labor Tribune* and the president did all they could, in what they considered a constitutional and a legal way, against the Waverly system of mining, and to abolish it. For these acts the editor of the *Tribune* and the president of the association were sued for libel and conspiracy, and the miners and the advocates of trades' unions in other industries, in the western part of the State, became deeply interested in the case as one involving the rights of labor organs to safely publish liberal expositions of the methods of any combination of capalists which, to their mind, are deemed unfair and oppressive. The case has not yet been tried.

In the district there has always been more or less complaint among the miners about doing " *dead work* " for nothing. All work which does not yield coal, such as bailing water from his room, posting the roof, laying track, and cutting clay veins and spars, is termed " *dead work*," for which the miners receives no recompense. As to bailing water from the room, or place of working, it is usual for the employers to hire sufficient labor to visit all the wet rooms early, and have them dry for the miners. This is a very considerate, if not to say humane, practice, for hardly anything could be so harsh as to compel a miner to work all day in wet clothes. But at some pits they are asked and constrained to do so, and, consequently, there is much complaint. As to laying track in their rooms and securing the roof with posts, the work is cheerfully done for nothing by the miner, as it is conducive to his personal safety and dispatch of business; but cutting clay veins and spars without recompense is deemed a grievance, and any one who will do it is considered but very little better than those who openly work at reduced wages. Many of the operators pay for this work by the piece or by the day, and in some instances a little extra per bushel is allowed for the coal produced. But at many of the mines, if the miner comes across one of these tough deposits, he has the alternative of cutting through it without pay or quitting the employment.

At different times the miners' organization have attempted to take the different practices in the pits and mold them into one uniform rule or schedule for the district. The convention of November, 1881, instructed the secretary to obtain information on this head from all the local bodies, to deduce therefrom some system of payment for "dead work" which could be applied to the whole district, and to promulgate the same as soon as practicable. When receiving the facts it was found that nearly every pit had a different rule and dissimilar views upon the subject. However, after much sifting, five rules were adopted and sent to the pits to go into effect on January 3, 1882, but the pits failed to abide by them, their affections to local usages in this regard over-riding their desire for any district system, so that irregularity and confusion remain on this matter in the district up to the present time.

The winter of 1881-2 was very mild and open, rises in the Monongahela river were frequent, and, consequently, during January and February the river markets were over-stocked with coal, and mining dull along the river.

In personal intercourse both miner and operator seemed to be agreed that if a total suspension of mining for a short period could be had, it would be the proper remedy for the river coal markets; but, to effect this, the leading operators could, or would not come together, resulting in extremely irregular work for the miners, and a market scarcely profitable to the employers during the succeeding spring and summer. These circumstances seemed to suggest to the smaller operators a reduction in the price of mining on the river, and thus, on March 16, the miners of Wood's Run and vicinity, in the fourth pool, assembled *en masse* and decided to refuse to fill the slack without pay as requested by their employers. About this time an effort was made to substantially combine the river operators to propose and insist on a reduction of one half cent in the price of mining, but a few of the most extensive operators, having a vast amount of coal afloat which was produced at the maximum rate of four cents a bushel for mining, kept aloof from the combination, lest, by reducing the price of mining, the marketable value of their coal already mined would be reduced proportionately.

Work at the railroad mines had been from fair to good during January, February, and March, but in the coal regions to the west and north of Pittsburgh, owing to the mild winter, the trade was sluggish; the employers were dissatisfied, and the means of the employés greatly reduced through scarcity of work. These facts presaged a strong disposition to reduce the price for mining in the competing regions, early in the spring, in order to obtain full or fair work during summer. About March 1, the general office of the Miners' Association was informed that a reduction had been offered the miners of the Hocking region, Ohio, and, taking the ground that a general reduction over all the country would leave the ratio between the prices of labor in the different districts exactly the same, the president of the miners, in the issue of the *Labor Tribune*, of March 4, 1882, commented as follows: "This region (Pittsburgh) sharply competes with that section (Hocking) at the Lake ports during the summer months, and consequently any reduction in wages in that productive district, must seriously disturb the repose of the coal industry around Pittsburgh. It would be folly for the surrounding miners to shut their eyes to the vast coal field, the unstinted enterprise, and the increasing production of the Hocking region. The price for mining in the Hocking region is, at present, twenty-six cents per ton lower than the price in this district, (Pittsburgh,) and with this large difference against us, a large number of the Pittsburgh miners will have no work during the coming summer."

And in the issue of the same paper, March 11, in commenting on the probable course of the Ohio miners, in regard to their proposed reduction, he said: "If they accept it, they will be thirty-five cents per ton under this district. If they keep the price at the present rate of eighty cents per ton, the difference will only be the same as last summer, and we can manage to get some work; but if they accept the reduction, and conclude to work at thirty-five cents per ton below the rates of this district, they will shut our railroad coal out of all the lake and northern markets."

But it was of no avail, as the Hocking miners, at a convention held March 7, agreed to accept a reduction of ten cents per ton, which was soon followed by a like reduction in the Tuscarawas, Mahoning, and Salinesville districts, all of which sharply compete with the railroad section of the Pittsburgh district during the summer. After this break, the railroad operators immediately began to complain about the large difference against them in the price of mining, and talked of a reduction. On the 21st of March, a number comprised principally of those operating on the Pittsburgh, Cincinnati and St. Louis railroad, and its Chartiers branch, met in Pittsburgh, and resolved to offer a reduction of one half cent per bushel for mining, to take effect on April 3. The officers immediately notified the miners, and on the 29th, a large general convention of the district met in Pittsburgh, to discuss the situation, to accept or refuse the proposed reduction, and to adopt rules governing local strikes. When the roll was called, it was ascertained that out of seventy-five mines represented, only thirteen were notified of a reduction, and thereupon the convention passed a resolution rejecting the proposition of the operators. This was the starting point of a long industrial struggle, which caused families to suffer much, diverted the trade to other fields, and seriously crippled, for the time being, the miners' organization. And yet, it cannot be seen how it reasonably could have been averted, owing to the manner in which the reduction was proposed. The operators knew that their employés are ruled by the behests of a majority of their number, and it is patent that when a proposition to reduce wages is made to a minority only, the majority naturally would reject, no matter how reasonable the demand may be. That a reduction would have been amicably accepted had the proposition been made general, is not certain, as the prices of the necessaries of life being at the time extremely high, and the winter prices for coal still prevailing, the miners at large considered that the reduction would seriously affect the comforts of their families, and moreover, it was considered too early in the season to demand such a proposition. Upon these grounds, the convention, in all probability, would have refused it. But a general reduction would have bettered the situation in two ways: First—by forcing upon the delegates a more thorough discussion, and a calmer reflection of the facts against them, and thereby increase the possibility of an amicable settlement, and secondly, by making the fight general, it would be short and decisive, thereby saving for the miners a great loss in wages and some privation, and to the operators their profits.

Pursuant to the resolutions of the convention, the miners employed at the mines where a reduction was proposed, ceased work on the morning of April 3, to the number of about eighteen hundred, and, by this time, distributed among twenty-four pits. Two on the Baltimore and Ohio railroad; two on Little Saw-Mill Run railroad; two on Montour railroad; thirteen on Pittsburgh, Cincinnati and St. Louis railroad; and five on the Chartiers railroad. On the 5th and 6th, the operators of Armstrong & Co.'s Alpsville mines, on the Baltimore and Ohio railroad, withdrew the reduction; but at the other mines, each party quietly sat down to wait on the other for concessions. During the month of April, the miners kept extremely quiet; no meetings were held, and a stranger visiting the localities where the struggle was progressing would hardly believe that he was in a mining community. The spring was opening, and those who had gardens planted them, little thinking, at the time, that the product resulting therefrom would be their chief means of support during the latter part of the struggle.

The convention which rejected the reduction, somewhat appreciating the break in Ohio, instructed their officers to invade that State with a call for a convention of all the Ohio miners, at Columbus, on the 19th, to demand back their former prices, and to establish an organization similar to that existing in the Pittsburgh district. To this convention the miners diverted their attention, believing that if the Ohio miners could regain their former prices, the Pittsburgh operators would promptly withdraw their proposition. The convention met, but was slimly attended. The Hocking region, the heaviest competitor of all the districts, had but two delegates, and they representing small bodies. After mature deliberation, the convention resolved to demand their old prices on the first of May following, provided the Hocking miners would ratify the movement, which they failed to do, and hence the efforts of the other districts of the State were ineffectual. As to the germ of an organization there planted, it has grown, and is at present flourishing.

As soon as the miners around Midway, on the Pittsburgh, Cincinnati and St. Louis railroad, saw the refusal of the Ohio miners to join their district in maintaining the old rates, they began to agitate the question of accepting the reduction. The executive committee pleaded with the most of them successfully; but a few insisted on working, and, while a continual stream of miner's argument and eloquence was kept pouring on them, they were not molested. The other "locked-out" pits remained firm and quiet. On May 1 the miners' central office was informed that an agent representing some of the firms on the Pittsburgh, Cincinnati and St. Louis railroad had appeared at Rendville, Ohio, in quest of colored miners to take the place of the miners formerly employed at the mines of Robbins & Co., at Midway, and at those of W. P. Rend & Co., at McDonald. On the 9th instant, a telegram, announcing their start for the places designated, was received, and, immediately, two agents, (one colored,) with an explanatory hand-bill, were dispatched to meet them on their way, at Dennison, Ohio; which they succeeded in doing, but their appeals were of no avail in inducing them to return.

On the 10th they arrived at Midway, and were carefully taken in charge by the employers. After a more careful review of the situation of affairs, and receiving more light on the subject, a number of them refused to work at the reduction, some of whom were returned to their former homes in Ohio, at the expense of the association, and others went to mines where no trouble existed. The effect of this influx of colored strangers was to make the resident miners more determined than before. They deemed it an outrage, they said, that their employers should set up against them the colored man, for whose liberty and protection many of them had fought and bled during the war of the rebellion. But, regardless of protests, it was soon discovered that more colored miners were coming, and that unless the old miners would at once resume work at the reduction, a systematic introduction of colored miners would be made in the mines on the Pittsburgh, Cincinnati and St. Louis railroad. Consequently the officers, with a view of preventing, if possible, the further displacement of the old miners, and thereby sparing their organization the loss of so many good men, called a convention to meet on the 17th of May to take measures to avert the introduction of any more colored miners. Notwithstanding the nonconcurrence of the Ohio miners, and the assurance, by telegram, that the colored miners were preparing to come on, the convention resolved to continue the contest, and ordered an assessment to be made on the working pits of one dollar *per copita* a week for its prosecution, and adjourned to the 20th, requesting each delegate to bring as much money as he could collect. On the 19th about one hundred colored men, with their families and household goods, arrived to work in the Laurel Hill mines, and all the efforts and arguments of the miners' officials and committees failed to induce them to leave, as they had come to stay. Another convention was held on the 20th, which decided to continue the struggle, and threatened to suspend mining all over the district on June 1st unless the employers would discharge and send away their new colored hands.

Subsequent to the 20th, the foregoing resolution to suspend operations throughout the entire district had been discussed considerably about the pits, and it was deemed unjust to indiscriminately punish those who paid the price for the faults of those who did not, and accordingly met again on the 29th, and rescinded the resolution.

Colored men were daily brought to the mines in the neighborhood of McDonald, and considerable coal was shipped by the 5th of June from the Willow Grove, Laurel Hill, Brier Hill, and Primrose mines, on the Pittsburgh, Cincinnati and St. Louis railroad. A number came to the Fort Pitt mines on June 12, which were augmented by forty more July 4. Fifty more colored men—supposed from Richmond, Va.—arrived August 9, and were equally divided between the Oakdale and National mines. Other operators introduced foreign emigrants, twenty-five of whom were received by the Patterson mines, on the Chartiers railroad, May 25. On the 31st, two car-loads arrived for the Montour mines. June 15, fifteen Hungarians arrived at Mansfield for Bell's, who received two more car-loads on the 3 th of June. The emigrants, however, were easily persuaded to accept the views of the miners on the situation, and as soon as they could save a few dollars would either leave the vicinity, or unite themselves with the strikers.

The introduction of these strangers, undoubtedly, had a tendency to prolong the struggle, as the old miners concluded, when they saw their places filled, that they would not be allowed to return, even though they accepted the reduction. This fact braced the wavering, and intensified the resolution of the more determined. Large and enthusiastic meetings were held when strange employés were brought to any vicinity, protesting against the invasion and resolving to "fight on," and a persistent but peaceable agitation against the tactics of the operators was vigorously prosecuted. In the most populous mining centers camping tents were pitched, where the more enthusiastic slept over night, and from which they sallied forth early in the morning to meet and plead with those disposed to desert the cause, by going to work at the reduction. Large platforms were erected in the vicinity of their camping-ground, and during the pleasant evenings of July, they would congregate with their families and friends and hold dancing parties, charging a small fee for each set, which money was applied to purchase food for the needy. But the most interesting and effective part of the camps was the commissary department. Long dining-tables, made with wide boards, were put up between the rows of tents, and spacious kitchens were built close by. The association furnished flour, beans, meat, cheese, coffee, and sugar, and thus all the "locked-out" miners and their male children partook of substantial meals. This plan reduced the cost of sustaining the needy to the minimum. It formed centers where confidence and cheer were daily renewed, and by this means the struggle was prolonged at least one month.

While the river mines and the remaining railroad mines were in operation, ample funds were realized from the weekly assessment levied on the working mines, but owing to the protracted strike of the iron mills of Pittsburgh, commencing June 1, the mines that supplied them with coal were compelled to stop; and during July, the run being over on the river, very little mining was done in the district, consequently the assessment receipts were materially decreased, compelling the officers to look elsewhere for relief. General sympathy was created towards the striking miners among the working classes, by liberal advertising in labor organs, and canvassers were sent all over the mining regions of the more western part of the State and Ohio, and even into the anthracite region, and the appeals for aid were in the main well received. But now, practically, all the idle men and their families were on the relief roll, and the receipts from all sources fell far short of sufficiency. The men and boys were still amply supplied at the camp tables, but the wives, daughters, and smaller children at home did not fare so well, and, added to this cheerless fact, notices were served on the men generally to quit their houses unless the rent was paid. When matters assumed this shape, the miners became less active in the field, and they abandoned camp to cheer their despondent families, and finally, between the 15th and 26th of August, after a struggle of twenty weeks, they were compelled to succumb to the conditions and terms of their employers. When the strike was over, the employers, where no strangers remained, took back all their old hands, and magnanimously forbore the use of the black-list. As soon as the "locked-out" miners accepted the reduction, a like reduction was immediately proposed at the other railroad mines, and accepted by the miners, so that by the 1st of September three and one half cents per bushel was the price for mining at all the mines located on the railroads in the Pittsburgh district, but for what little work that was done in the river mines, four cents continued to be paid.

Had a little more time, conference, and deliberation been given to the subject before the 1st of April, the struggle might have been averted, thereby saving the employés about $450,000 in wages, and about $250,000 in profits and freight to the operators and railroads; but it is very difficult to compromise, or bring the hostile parties to reconsider their action in the midst of a struggle, until circumstances compel either to submit. Efforts were made on both sides to compromise, but neither could be bent from their original position.

The result was great injury to all parties interested, family savings were eaten up, and store debts were contracted from which many are not yet extricated. Men with settled homes were compelled to move away; the trade at Lake and interior points was absorbed by other mining communities, while the association was seriously crippled and rendered unable to obtain for mining the succeeding fall what might have been secured, had this trouble in its incipiency been amicably settled.

From the termination of the strike to the 1st of November, 1882, the railroad mines worked with but little intermission; the reduced rate for mining, with the superior quality of the coal, enabled the operators to command during this brief period, their full share of the Lake trade.

A convention was held on the 27th of October, 1882, to consider the advisability of asking for the price prevailing before the strike—four cents per bushel—but the pits lately on strike were but slimly represented, and consequently the question was tabled, and the convention adjourned. At the convention held on the 15th of November, for the purpose of electing officers of the association, the subject was again brought forth, and it was agreed that a strike should take place on the 20th, unless the half cent advance was conceded. Only a few pits went out, and seeing that the others did not follow, they resumed work again on the 29th, but evidently the question is not abandoned, as an agitation was at work through the month of December, to bring the miners to a closer union, and in all probability as soon as the railroad miners feel themselves sufficiently recovered from the effect of their struggle during the summer of 1882, and that the coal trade will warrant it, they will again make a determined effort to regain their former rate of wages.

### Phœnixville.

In the month of January a difficulty arose between the Phœnix Iron Company, of Phœnixville, and the puddlers in their employ. The trouble emanated from an order issued by the superintendent requiring the workmen to make six heats of iron for each day's work. The order became the subject of consideration in the lodge of the Amalgamated Association that had recently been organized in that place. It does not appear that the lodge absolutely refused to attempt to perform the work required, but the fact of it, becoming a subject for lodge deliberation, induced the company to discharge the men. This fact becoming known, the men in the other departments organized a lodge with a view to coöperate with the puddlers and compel their reinstatement. This had the effect of precipitating a general conflict between the company and the men, the former refusing to give employment only to those who would openly renounce all connection with a trades' association, and the latter refusing to submit to such dictation. The president of the National Association, as did a local committee of the men, sought an interview with the officials of the company, but were peremptorily denied that privilege. Immediately upon the discharge of the men, efforts were made by the firm to start the works with non-union men, and upon conditions agreeable only to them. In this they did not experience much difficulty, as they readily procured the hands required, a number coming from abroad. All the departments were soon in full blast except the puddling, which remained idle from the 28th of January until the close of August, when it resumed upon conditions fixed by the firm. The estimated loss in wages in this struggle amounted to $150,000.

### Homestead.

One of the most stubborn contests occurred at the Bessemer steel works, at Homestead, during the months of January, February, and March, 1882, involving at times danger of life and limb and threatening outbreaks of the most serious character. This place is a prosperous manufacturing town of about two thousand inhabitants, situated on the south bank of the Monongahela river, about seven miles above Pittsburgh, with which it is connected by the P. V. and C. railroad on the south, and the B. and O. railroad on the north side of the river. The steel works are about a half mile above the town, and separated from it by the city Poor Farm, which forms a barrier to travel either way. The only avenue of communication between Homestead and the steel works is the track of the P. V. and C. railroad, which is at the same time one of the main thoroughfares of the town. At the time of the commencement of the strike the works had been in operation about one year and employed about five hundred men. When the works went first into operation some difficulty was experienced in adjusting the wages to be paid the men, and in order that trouble should cease, the employés were required to sign an agreement to work for certain fixed prices until the close of the year. In the beginning of the last year the works stopped in order to make some necessary repairs, and, in time, the manager notified the men that before work would be resumed they would be required to re-sign the agreement for another year.

The employés had organized two lodges, and become identified with the Amalgamated Association of Iron and Steel Workers, who, by virtue of lodge resolutions, refused absolutely to sign the aforesaid agreement, and, as a result, there was a strike or lock-out. Subsequently, the manager gave notice that there would be a reduction in the wages of many of the employés, which, if they would accept, the proposed article of agreement would be withdrawn by the company. This proposal, it is needless to say, tended only to intensify the position and action of each. Finding that the men would not accept the propositions made to them, the company resolved to seek new hands, and, if possible, operate their works with non-union men. Parties, both from the neighboring towns as well as from abroad, were engaged, but great difficulty was experienced in putting them at work, as they were intercepted on their way by old hands, and many of them were induced to leave again. Towards the close of January, a party of eighteen men arrived, with the avowed intention of going to work, but they were met at Homestead by a committee of strikers, who prevailed upon them to return. About the same time, a fight took place between some union and non-union men, in which a number were seriously injured. Out-posts were stationed by the strikers on all the roads leading to the town and the works, but, notwithstanding their efforts, the company finally gathered a force of men, and the works resumed operation.

Those upon strike used every effort to persuade the others to quit work, to provide against which, a number of special officers were placed on guard at the works. Considerable turmoil continued to exist, and quite a number of altercations took place between those in the employ of the company and others, while on their way to and from work. These outrages were strongly repudiated by the strikers, who charged them upon tramps and other bad characters that had been attracted to the scene of the disturbance. The company, however, held the union men responsible, and instituted a number of suits for conspiracy and assault and battery. Legal steps were also taken to eject the strikers and their families from the company's tenement-houses, which had the effect of increasing the feeling of bitterness of the union against the non-union men, as well as against the company, and thus the citizens of Homestead were kept in a state of constant alarm by frequent affrays. On February 9, six of the men who had been arrested had a hearing before a justice of the peace, and were held for court. The officers of the Amalgamated Association were not only active in securing the proper bail, but also deprecated any violence, to prevent which they were mainly instrumental in having twenty of the men sworn in as special policemen, who were assigned to duty to preserve the peace of the town.

On the night of March 1, the first serious outbreak occurred. A fight took place in Homestead, in which several men were badly injured. Those upon strike organized and patroled the town, when order, for a time, was again maintained. The directors of the company held a meeting the following day, in Pittsburgh, when it was decided to place the conduct of affairs at the works entirely into the hands of the manager. The sheriff was called upon to protect the property and the men at work from violence, and, in compliance, a large force of deputy sheriffs were sworn in and ordered to Homestead to preserve the peace.

The superintendent of the city Poor Farm became alarmed for the safety of the institution, which lies mid-way between the works and the town, and, at his request, the mayor of Pittsburgh sent a lieutenant of police and five officers to protect the place. The city Poor Farm station, on the P. V. and C. railroad, became the scene of several affrays, and was the point at which the first bloodshed occurred. At six, A. M., March 2, a collision occurred between the strikers and a party of non-union men, while the latter were on their way to work from their homes on the hill overlooking the works. The non-workers held complete possession of the railroad tracks, which those at work were obliged to cross going to and from the mill. A number of shots were exchanged, and several on each side were injured. On the afternoon of the same day sixteen additional deputy sheriffs were placed on duty between Homestead and the steel works. At five, P. M., while a party of men were returning home, under the escort of a sheriff's posse, they were assailed by a crowd with stones at e ty Poor Farm station; one of the officers was struck on the head and seriously injured. He attempted to arrest one of the men in the crowd, but was resisted, and received several blows about the head and face from clubs and stones. Drawing a revolver he fired several shots into the crowd, wounding two men; an attack was then made upon him, and he was disarmed and beaten until unconscious; one of the other offices was similarly served, and the balance were prevented from rendering any assistance by the crowd. The arrival of an additional force of officers dispersed the rioters, and the city Farm station was taken possession of by a detachment of Pittsburgh police stationed at the Farm. Great excitement at Homestead followed this outbreak, and the town was patrolled by the sheriff's officers throughout the night. The Amalgamated lodges proposed a conference with the manager and a delegation of the men at work, with a view, if possible, of adjusting the difficulties, but, owing to some misunderstanding, the hands at work failed to respond, while the manager refused to entertain any propositions that they might make. The number of men engaged, by this time, had been greatly reduced by defections consequent upon the alarm engendered by the numerous disturbances. On the 4th there was a renewal of the trouble, and those at work demanded arms for self-defense. The president of the National Amalgamated Association succeeded in having a conference with the manager of the mill, but, owing to a failure to agree as to the final disposition of those then at work, no compromise was affected.

Quite a number of the steel manufacturers of the city of Pittsburgh were large stockholders in the Bessemer steel works, and were furnished by the latter with steel ingots of various sizes, which were reduced, at their respective establishments, into bars and shapes suitable to their trade. In each of their city works were subordinate lodges of the Amalgamated Association, who now began to discuss the propriety of suspending work until their employers, who were also interested in the Homestead works, would interfere and settle the difficulty in the latter place in favor of the association. Had this threat been executed, it would have complicated matters very much, as it would stop several other works, and throw a large force of additional workmen into unnecessary idleness. Fortunately, this course found but little favor at the lodge meetings, and thus no attempt was made in that direction.

Early on the morning of the 14th, two sheriff's officers were shot down near the mill by a party ambuscaded in a train of freight cars, which stood upon a siding of the P. V. and C. railroad; the fire was returned, but it was not known with what effect, as the attacking party beat a retreat. A short time afterwards a man was found lying in a dying condition upon the railroad track, near city Farm station, which caused great consternation and alarm among those at work. The result was, men began to get scarce, when the officers of the company held a meeting and ordered the works to be shut down for an indefinite period, offering large rewards for the arrest of the perpetrators of the foregoing outrages. The executive committee of the Amalgamated Association and the officers of the company held another conference, when it was agreed "that the question of reduction of wages should be withdrawn; that the new men should be retained, and that they would continue to be employed upon one turn, while the old union hands should operate the other." Upon these conditions work was resumed, but not with the best of feeling between the new and old hands. Mr. Clarke, the manager, tired of the protracted strike, resigned his position on the 29th of March, but the works continued in operation, the union men gradually resuming their old places, so that in a short time all were at work again.

### Pittsburgh Iron District.

The wages of the employés of the various iron and steel works west and north-west of the Allegheny mountains, in this State, have for years been regulated by a scale of prices fixed upon the marketable or selling price of iron. This scale is annually agreed upon by a conference committee, composed of representatives of the Amalgamated Association of Iron and Steel Workers and of the manufacturers, and continues in force from June 1 until the same date of the succeeding year. The price thus annually fixed not only applies to the works in the western portion of our State, but extends throughout eastern Ohio and the entire West, with the exception that west of Cleveland, Youngstown, and Zanesville, a slight advance was conceded upon the basis usually agreed upon at Pittsburgh.

The activity of the iron and steel trade during the years preceding 1882, with its consequent prosperity, together with the large additions to the membership of their organization, led many of the workingmen to believe that the times justified an advance in wages. This belief, however, was not in accord with the views of the officials of the organization, as they pronounced against the propriety of asking an advance in the face of the then declining market, but, notwithstanding their protest, the question was earnestly and constantly agitated, so that, as early as the 15th of April, a delegate meeting was held in the Pittsburgh district, and a resolution adopted, demanding an increase of wages. The demand was an advance "of fifty cents per ton for puddling; a corresponding advance for muck-rolling; for old rail-piles and faggots made into finished iron on bar-mills, ten cents per ton extra. The sheet-mill scale to advance fifteen per cent., except on thirty-gauge, which was to be thirty per cent. For all sheets, No. 18 and lighter, over thirty inches and under twenty-four inches wide, by eighty-four inches in length, and all over thirty-six inches wide, twenty per cent. extra."

The scrappers' scale to advance from $2 to $2 25 per ton for heating piles on boards, and half the price per ton paid for boiling to be paid for bushling on sand or cinder bottom, and when working sheet-iron scraps and swarff mixed, $4 50 per ton."

The knoblers' ton, which has heretofore been two thousand four hundred and sixty-four pounds, to be reduced to two thousand two hundred and forty pounds, the same as other branches."

In accordance with previous arrangement, the conference committee representing each side assembled, upon the 17th, to exchange views, and, if possible, come to an agreement. No decision, however, was arrived at, and the conference adjourned to meet on the 28th of April. At this second conference, there was a protracted discussion upon the proposed new scale. The mill owners contended that the cost of producing iron could go no higher without working serious injury, and if the new scale was insisted on, they must either shut their mills down and fight it out, or otherwise eventually go into bankruptcy. The workmen claimed, upon their part, that the profits derived from the sale of manufactured iron were sufficient to justify them in demanding the advance, more especially in view of the fact that many works were engaged upon specialties, which commanded prices greater than that of the ordinary sizes of common iron, and upon which the scales were based. Each side presented their case with remarkable earnestness, but failed to arrive at any conclusion, adjourning to meet on the 22d day of the succeeding month.

On the following day a meeting of the workmen was held, composed of delegates from the various sub-lodges in the district, and to which the conference committee submitted a report of the proceedings of the meeting with the manufacturers on the previous day. Notwithstanding the objections of the manufacturers, as made manifest by this report, the meeting pronounced in favor of the advance; but in order to give all the members an opportunity to express themselves, it was resolved that the matter be referred to the various sub-lodges for their special consideration, the result thereof to be reported at an adjourned delegate meeting, to be held on the 20th of May. This had the effect of postponing further conference with the manufacturers for the time being, as there was a possibility of changes being made in the formation of the various scales. In the intervening time the manufacturers of the city held a meeting, the proceedings of which were not made public, but every indication pointed to united action in opposition to advancing the wages. This position was also understood to be sustained by the manufacturers of western Pennsylvania, eastern Ohio, and West Virginia, all of whom regulated the payment of wages upon the basis fixed at Pittsburgh. The importance of the delegate meeting on the 20th was keenly felt throughout the entire district, not only by those directly interested as employer and employé, but also by thousands of others, engaged in almost every branch of business, whose interests were at all times affected by the prosperity or decline of the iron trade. On the 20th the convention assembled at Schiller's Hall, and was reputed to be the largest delegate meeting ever held since the Amalgamated Association had been organized. Every lodge in the district was fully represented, and reports of the action and sentiment of each sub-lodge presented, showing that the demand for an advance was sustained by a large majority of the membership. There was a diversity of opinion, however, as to how far the advance should extend, or rather, were not the class denominated as "finishers" entitled to an advance equal to those in the puddling department, but, in order that the demand might the more readily be granted, it was deemed advisable to confine it to the latter. Accordingly it was agreed that at the next conference meeting with the manufacturers, to limit the demand for an advance to the "puddlers, muck rollers, and scrappers on sand bottoms, the prices to be $6, instead of $5 50, on a two and a half cent card, for puddling; muck rolling, one eighth the price of puddling, as heretofore, and scrapping on sand bottom to be $2 75 per ton, all other demands to be withdrawn." With this modified proposition, the committee met the manufacturers on the 22d. The workmen were represented by John Jarrett, president, and William Martin, secretary of the Association, B. A. McGinty, Ambrose Betz, John Walters, Francis E. Carroll, James Graham, Charles Prill, James Mercer, and Josiah Riley. The manufacturers by James I. Bennett, D. B. Oliver, A. F. Keating, J. Q. Everson, John W. Chalfant, A. E. W. Painter, J. K. Verner, J. R. Wilson, John M. Bailey, and Joseph D. Weeks, Mr. Keating acting as president and Mr. Weeks as secretary. Mr. Jarrett, on the part of the men, submitted the proposition as agreed to by them, when the manufacturers, after consultation, announced that they were willing to submit the price of scrapping to a sub-committee for adjudication, but as to the other prices demanded they could not, nor would not, agree to pay. Whereupon the committee of workmen replied that inasmuch as the most important demand had been refused it was useless to waste time in discussing the other, and therefore moved an adjournment, which was agreed to.

Their separation put an end for the time to all further conference, each side settling down to await further developments. The old scale terminated on the last day of May, and as the one side was unwilling to renew the compact as it stood for another year, and the other side would concede no advance, a strike was inevitable.

The membership of the Amalgamated Association, is composed of all classes of workmen in the iron and steel mills, and as a consequence, when a dispute arises in one department, all counsel together, and resolve as to the one course that shall be pursued; thus, when one body becomes idle by refusing to work, all others, as a rule, join them. Another delegate meeting was held on the 27th, when the action of the conference committee was officially made known. At this, as at all other meetings, delegates representing the various departments of the many works were assembled, and inasmuch as the manufacturers had refused to concede an advance to one particular department, which, to all appearance, was about to bring on a strike, it was determined to include other branches also. To stop the entire works upon a plea that puddlers, muck rollers, and scrappers were not advanced, was not exactly in accord with the sentiments of a large number, employed at other occupations, notwithstanding the fact, that they would have continued work at the old rates if the aforementioned classes had been given the wages asked for. If all were to go upon strike, why not make their cause one that would embrace all the leading departments?

As the manufacturers' committee had refused to sign the scale last presented, and thus bind all the mill owners, it was now resolved, that when the first of the month came, that the workmen of each mill should present a scale to their respective employers, and if they refused to sign it, all hands would quit work. At this meeting, too, the scale was again re-adjusted, making it substantially the same scale as presented by them on the 17th of April, with an additional clause, fixing the wages of engineers. As the representative committee of manufacturers had refused to sign the scale presented on the 22d, it was not at all probable that one containing increased demands would receive much favor at the individual hands of many, if, indeed, any of them. As a result, on the night of the 31st of May, work was suspended in all the leading mills throughout Western Pennsylvania. The suspension extended from Pittsburgh, westward through Pennsylvania and Mahoning Valley to Cleveland, including Wheeling, West Virginia, and as far north in this State as Erie. At no previous time was there a strike so general in its character among iron and steel workers, involving over twenty-two thousand persons, and about forty-eight rolling-mills in Western Pennsylvania, and almost an equal number beyond the limits of the State. Both sides settled themselves at once to a condition of absolute determination not to yield to the other. Singer, Nimick & Co., with one or two other steel manufacturing firms signed the scale, but this did not avail much, as their works contained but a very limited number of puddling furnaces, and those they allowed to remain idle. During the first few days the hopes of the men brightened, as it was announced that the firm of Carnegie, Bros & Co.'s Union Iron Mills, Pittsburgh, had signed the scale. This firm were large producers of iron, and employed nearly one thousand persons. These hopes were intensified when it was again made known that the Whitaker Iron Company of Wheeling, and four or five other small companies in Ohio, had also signed the scale; but the Pittsburgh iron manufacturers, generally, were silent.

On the 7th of June the manufacturers of the entire western district, in response to a call, assembled at the rooms of the Western Iron Association. This was one of the largest meetings of this character that was ever held in the United States, capital of between thirty-five and forty million dollars being represented. After a protracted session, its object was accomplished in the formation of a protective and defensive organization against the Amalgamated Association. The rumbling noise of machinery was now no longer heard, furnaces stood cold and cheerless, the atmosphere above the stacks was not darkened as heretofore by curling volumes of smoke arising from the fires within the works. Men remained at their homes or sought employment at other avocations, while the cities and towns within the toils of the strike wore daily the appearance of successive holidays. Those who, in a business way, had dealings with the workmen, began to refuse them the usual credit, when purchasing the ordinary necessaries of life, and thus their reliance upon the association became greater, and as the drain upon that resource increased, matters gradually became more serious. On the 17th of June, a great labor demonstration was made, which was not confined exclusively to the Amalgamated Association, but was participated in by many other labor organizations. Delegations attended from Cleveland, Youngstown, Wheeling, and other cities and towns affected by the strike. A heavy rain in the afternoon interfered somewhat with the procession, but, notwithstanding, it was estimated that there were from ten to eleven thousand persons in line, all conducting themselves in the most creditable manner. Mill owners in different localities had by this time concluded to make an effort to start their works, irrespective of the demands of the association. The first to do so was the Superior rolling-mills in Allegheny City. Here a number of men were secured, and the works partially resumed. At Apollo, Armstrong county, Messrs. Laufman & Co. gave notice that those formerly in their employ might report for duty upon a certain day, but they must discard all allegiance to the association, otherwise new men would be employed. To this demand there was a general non-compliance; but, on the 14th of June, the mill resumed partial operation, with a number of non-union men. Others joined them within a few days, and the works continued in successful operation. In the latter part of June the Mount Hickory Iron Company, of Erie, Pennsylvania, issued a circular to those in their former employ. The wages paid by this firm were slightly less than that paid at Pittsburgh, but the workmen were members of the Amalgamated Association, and, as a consequence, fully cooperated with their brethern throughout the west. As the circular of the company and the response of the men embody quite fully the reasons actuating the entire association, as well as the manufacturers, they are herewith given in full:

*To the puddlers, heaters, and rollers of the Mount Hickory Iron Company, Limited:*

On the 27th day of May last, without previous consultation with, or notice to this company, you presented to the superintendent of the mill a paper purporting to be a scale of prices you demanded, and proposed to charge for the ensuing year for the labor performed by you in your various departments, with the alternative to this company that unless the same was agreed to on or before the 1st day of June, you would stop work. This company not having complied with your demand, you voluntarily ceased to work in accordance with the notice given.

This action on your part, as we understand the matter, was taken in pursuance of orders you received from the officials of what is known as the "Amalgamated Association of Iron and Steel Workers," an association organized for the purpose, as it is asserted, of the protection of labor.

We propose, as briefly as possible, to try and get at the facts in connection with this organization, its objects, aims and rules, and its practical relations, not only to the mill-owners of the country, but to the consumers of iron generally. It is a self-evident proposition that the producer of any commodity made or manufactured for sale, must sell it at a price which will cover the cost of the material of which it is composed, and the wages paid for its production, to save himself from loss; and to the cost of the material and the wages so paid he is justly entitled to a fair percentage of profit for the capital invested in his business and as remuneration for his own time and labor. But it is a fact well known to every business man that the law of supply and demand, after all, will control the price the commodity he produces will command in the markets of the world, and that his chances of realizing a profit, or saving himself from loss, are mainly contingent upon the fact whether the cost of the material of which his product is composed, and the wages paid for its production, were purchased under the same normal condition that he must be subject to when offering his merchandise for sale. Now, if the Amalgamated Association, as constituted and controlled, enables them to extort from the mill-owners a rate of wages far in excess of the average paid in the country for other skilled labor, and out of all due proportion to what they are justly entitled to, based upon the capital invested by the mill-owners, and the cost of the stock used in the product of the mill, as compared with the price this product will command in the market, it is some evidence of the injustice of their demand. Our experience at our mill proves that after having paid for the material that enters into a ton of muck bar, and allowing you $5 25 per ton for puddling, that the same could not be manufactured into the standard sizes of bar-iron, and sold at the ruling price of iron for the past year, so as to cover its cost of production.

In the scale of prices agreed on between the Puddlers' Union and the mill-owners in 1880, the union conceded the fact that when the standard sizes of iron commanded two and one half cents per pound in Pittsburgh, that five dollars per ton was a just and equitable price for puddling.

The mill-owners conceded this proposition, but the facts show that the standard sizes of iron did not command two and one half cents per pound in 1880, and that the average price was less than two and one half cents for that year.

In June, 1881, when the agreement for 1880 expired, the association ignored this arrangement and demanded an advance of fifty cents per ton for that year over the price of 1880, and this was conceded to them.

Now, in May of the present year, the association demands a further advance of fifty cents per ton over the price paid in 1881, and the facts show that the standard sizes of iron in 1881 could not be sold at an average of two and one half cents per pound during that year; and yet at the very time you demanded this last advance of fifty cents per ton it was impossible to find a market for the product of the mill at the base price of two and one half cents per pound, which price you had already conceded should be received by the mill owners, when the price of puddling was five dollars per ton instead of six dollars, as now demanded.

Now, it may be well to see what you were realizing as your proportion of the profits at the time that you made the last demand for increased wages.

We find by our last pay-roll, that for the two weeks ending on the 27th of May, the following were the daily wages paid at this mill:

| | | | |
|---|---|---|---|
| Puddlers averaged, | $4 04 | per day | each. |
| Helpers averaged, | 2 08 | " | " |
| Bar mill rollers averaged, | 5 63 | " | " |
| Heaters averaged, | 4 23 | " | " |
| Roughing catchers averaged, | 2 80 | " | " |
| Finishing catchers averaged, | 2 25 | " | " |
| Roughers averaged, | 2 80 | " | " |
| Helpers averaged, | 2 00 | " | " |

That on the ten-inch mill the

| | | | |
|---|---|---|---|
| Rollers averaged, | $9 69 | per day | each. |
| Heaters averaged, | 6 95 | " | " |
| Roughers averaged, | 3 47 | " | " |
| Heaters' helpers averaged, | 2 00 | " | " |

That on the eight-inch mill the

| | | | |
|---|---|---|---|
| Rollers averaged, | $6 87 | per day | each. |
| Heaters averaged, | 5 19 | " | " |
| Roughers averaged, | 2 59 | " | " |

And that on the muck-mill the

| | | | |
|---|---|---|---|
| Rollers averaged, | $4 75 | per day | each. |
| Dragouts averaged, | 2 00 | " | " |
| Catchers averaged, | 2 00 | " | " |
| Roughers averaged, | 2 00 | " | " |
| Muck-bar weighers averaged, | 2 70 | " | " |

The number of hours constituting a day's work at the mill for the puddlers never exceeds ten hours, and is much oftener eight hours per day; and it is a fair estimate to base the average as not exceeding nine hours per day. According to the pay-roll, puddlers received $4 04 per day of not exceeding nine hours, and if the demand now made by you were conceded, you would receive an advance of thirty-seven and one half cents per day, making an average of $4 41 per day.

We think that the foregoing statement of prices received by the employés of the mill, shows that you were not very hardly oppressed by capital, and that you have received during the past two years an undue proportion of profits based upon the agreement of 1880, which you at the time conceded to be equitable and fair.

There is no question in dispute at this time between this company and you in regard to your demand of an advance of fifty cents per ton for puddling, as under no possible circumstances will your demand be conceded in the present condition of the iron market, and the only question that could possibly arise between us would be whether we could pay you $5 00 or $5 25 per ton for puddling.

The association to which you belong, and which controls your actions, independent of any views which you may have of your own, undertakes to regulate and control the question of labor and employment of all the men engaged in the iron mills of the country west of the Allegheny mountains. They not only fix arbitrarily the prices to be paid by the mill owners to the puddlers, regardless of the fact of some mills having local advances not possessed by others, or taking into consideration the cost of living and expenses, or the convenience of some localities over others.

When this mill was started in May, 1879, its policy was to employ non-union men. This policy was adopted, not because we had any hostility to the Puddlers' Union, but from the fact that the arbitrary rules and regulations of the association of which you are now members, virtually made it impracticable for us to successfully carry on our business at this place. We believed that every man had a right to make his own bargain and his own terms, and we could not see wherein the policy was beneficial either to you or ourselves, that required us to go to Pittsburgh to negotiate with an association having no common interest with us, for what we should or should not do in the management and control of our affairs.

We attempted to carry out this policy, and at last a compromise was effected with your association, by which it was agreed that members of the association could work in the Mount Hickory mills at twenty-five cents per ton for puddling under the Pittsburgh scale. This concession did not place us on an equivalent with the mills more advantageously located, in the cost of material necessary to produce a ton of iron, nor was the concession an equivalent of your savings in the cost of living, house-rent, and other incidental expenses and advantages in working here over many other localities.

We have now fully determined that we will make the effort to control and manage our property under such just and equitable rules and prices for labor, that men who are not controlled by any association or society will find it to their interest to become employés of this company.

We have arrived at this decision regardless of what the price of puddling may be, and we feel that it is nothing more than justice to you to let you know this fact, so that in case you are unwilling to work upon this basis, you may look elsewhere for employment.

Individual contracts will be made with each employé of the mill. These contracts will be in the hands of the superintendent on Wednesday, July 5, and the men who desire to continue work in the mill must notify the superintendent, and those who are unwilling to do so must prepare to vacate the premises occupied by them belonging to the company.

Mt. Hickory Iron Company, Limited.

Erie, Pa., *June 27, 1882.*

The agreement alluded to is as follows:

THIS AGREEMENT, made this . day of . . . . , A. D. 188 , between the Mt. Hickory Iron Company, limited, party of the first part, and . . . . , party of the second part, witnesseth: That the said party of the second part has agreed, and by these presents does agree, to enter into the employment of the said party of the first part as a . . . . . . , to commence on the . day of . . . . . , A. D. 188 , and continue therein until the . . day of . . . . . , 188 , and to abide by, adhere to, and observe the rules and regulations hereto appended, which rules and regulations are a part of this contract; and to abide by, and observe all other rules and regulations promulgated from time to time by the said Mt. Hickory Iron Company, Limited, with the consent of the party of the second part, which said rules shall have been made for the purpose of regulating his, (the said party of the second part,) employment in and about the mill of the said Mt. Hickory Iron Company, Limited; and he, the said party of the second part, also agrees not to be absent from his proper work in the mill, without leave from the mill superintendent, except in case of sickness or other unavoidable contingency that might prevent him from working.

And the party of the second part further agrees that he will not stop work, join in any "strike," or combination for the purpose of obtaining from, or causing the said Mt. Hickory Iron Company, Limited, to pay their employés an advance of wages beyond what is specified in this contract; and that he will not, during the time specified in the first clause of this contract, in any way aid, abet, or countenance any such "strike" or combination for any purpose whatever, hereby agreeing, that if he, the said party of the second part, shall violate any of the provisions of this contract in this regard, he shall thereby forfeit all claims for remuneration for work previously performed and not paid for, and that the said party of the first part shall be released from any liability therefor.

And it is further mutually agreed by and between the parties hereto, that if the party of the first part should shut down their mill from any cause whatever, that then, and in that case, the party of the second part shall have no claim upon the party of the first part for employment or damages growing out of such cessation of work. But the party of the first part agrees that in case the said mills should work on reduced time, then, and in that case, the said party of the second part shall, so long as he may remain in the employment of the said party of the first part, be entitled to his share of the work in the said mill, which said share shall be determined by pro rating his (the said party of the second part) time to the time of the whole number of men then employed in the mill.

And in consideration of the above recited promises and agreements on the part of the party of the second part to and with the said party of the first part, and the same well and truly kept and performed, the said party of the first part agrees to pay to the said party of the second part for each and every ton of . . . pounds of iron . . . . . . by him . . . . cents.

Witness our hands this . . day of . . . . . . , 188–.

. . . . . . . . . . . . . . . . . . . . , [L. S.]
. . . . . . . . . . . . . . . . . . . . , [L. S.]

To the foregoing circular the lodge issued the following reply:

*To the Mt. Hickory Iron Company, Limited:*

The circular issued and addressed by you to the puddlers, heaters, and rollers of the Mt. Hickory Iron Company, Limited, and purporting to be the views of the firm relative to the scale of prices submitted to you for adoption for the current year, we have perused with the care and respect which it merits, and at a meeting of our lodge have taken action thereon. We find it contains a number of statements which do not correspond with the facts as they are known to us, and arguments deducted from said statements which, as the document obtains publicity, are calculated to present us in an unreasonable attitude before the public, and thus bias public sentiment against us. Therefore, without any desire of being discourteous, or of raising any controversy with the firm, we have resolved, in justice to ourselves and the position we maintain, to present the matter to you and to the public consideration from the standpoint we view it. As by the circular we are to understand that all avenues hereafter are shut off by which we might attempt to come to an understanding with the firm, all conference thereby being totally denied us, our only alternative being a passive submission on our part to the arbitrary ruling of the firm, we are under the necessity of adopting the means resorted to by you, and which the press affords to all, to obtain a hearing for our cause.

We are willing to admit, and our association has always made such in all its deliberations and conferences relative to the adjustment of wages a matter of consideration, that the manufacturer is "justly entitled to a fair percentage of profits for the capital invested in his business, and as remuneration for his own time and labor." Yet, conceding all this, we claim, too, that the laborer is also entitled to a just remuneration for the part he performs in converting into salable product the material which otherwise would remain unprofitable and useless upon the hands of its possessor. Intelligent workingmen in every trade and occupation, believing that it would be to their common interest that peace and harmony should always be maintained between capital and labor, do regret that industrial economy as now propounded fails to furnish any reliable or acceptable criterion by the application of which a just and satisfactory remuneration would be accorded to both parties. Therefore, it is that capital and labor are so frequently disputants, both sides in too many instances acting as if each is entitled to the most that can be extorted from the other. Yet even this fact furnishes no reason why labor should give up all right as a contestant, and passively submit to be controlled by the dictation of capital. We claim that the object of our association is not that of extortion, but to give its members that power by combination which amassed capital inherently possesses, and which will enable them to ask, and, if necessary, exact a fair and equitable apportionment of profits to each party to the contract in the purchase and sale of labor. With this end in view, it has annually proposed a conference meeting with the manufacturers, where both parties are brought face to face for the interchange of views and opinions, and, if possible, to amicably adjust all differences that may exist between them. Such is the object; intentionally honest and honorable, and if the late conferences failed in their object, it was more due to the fact that even from the manufacturers mere assertion will not establish a position, and it will take more facts and figures than have yet been shown to demonstrate that the demand of the association is anything but fair and reasonable.

You claim that your "own experience proves that after having paid for the material entering into a ton of muck bar and allowing the puddler $5 25 per ton, that the same could not be manufactured into standard sizes of bar iron, and sold at the ruling price of iron for the past year so as to cover its cost of production." Now to prove that if the firm incurred any loss by the production of finished bar iron during the past year at ruling prices that it cannot be chargeable to the puddling department, or to the cost of production there incurred is the fact that hundreds of tons of muck bar was sold by you direct from the puddler's hands, and much more would have been sold could it have been produced in excess of what was required to keep the finishing departments of your own mill in operation. Moreover, manufactured by you at $5 25 per ton, it was sold and shipped to a locality where the puddler's wages was $5 50 per ton, (and since then has been six dollars per ton,) to be worked into finished bar to be sold in competition with your product of the same class. If anything is proven by this fact, it is that you were enabled to produce muck bar for your own mill, sell the same to other mills and take in a profit as a result of your puddlers working cheaper than did the puddlers in those other places. But what are the standard sizes of bar iron? Do they include all sizes of iron manufactured in your mill? We think not; standard sizes, we understand, are common sizes, and bring the lowest prices. If standard sizes include all sizes, your mill must have been running at a loss during the past year, and we offer this proposition: Let such be clearly demonstrated and we will immediately withdraw our demand. On the other hand, if, as we maintain, that the standard sizes do not take in the sizes upon which far more money is realized, let it be considered that the puddler, whose wages is based upon the quoted price of common bar or the standard sizes of iron, receives only the same wages, irrespective of the fact that the product he turns out styled muck bar is used in the production of the finer and higher-priced sizes of bar iron, as well as in the "standard sizes." Therefore, we think that your method of showing that your sales during the past year have not covered the cost of production is not exactly fair. Mr. James M. Swank, secretary of the American Iron and Steel Association, tells us that the average price for bar iron in Pittsburgh has been for the past two years $56 per ton, or $2\frac{8}{10}$ cents per pound. The puddler's wages in Pittsburgh has averaged $5 50 per ton, or thirty cents per ton less than what the average price of iron would entitle him to receive, or, in other words, the manufacturers have realized six dollars per ton on the average sales above what bar iron was quoted at, and at which their skilled labor was paid. In Erie, the puddlers receive still less by twenty-five cents per ton, which does not well show that we were paid in excess of what was our due. So much for what some figures show.

You state that the "union" conceded, in June, 1880. that $5 a ton was a just and equitable price for puddling. This statement is wrong, as the price then adopted was $5 50 per ton. Next you state—James M. Swank to the contrary notwithstanding—that although the average price of iron was two and one half cents per pound in June, 1881, we demanded an advance of fifty cents per ton. The fact is, in 1881 the puddlers' scale continued as in 1880—$5 50 per ton. For five years previous to June, 1880, the puddlers' scale had annually been renewed at a basis of $5 per ton, on the card rate of two and five tenths. Up to June, 1879, bar-iron generally sold below two cents per pound, and in January of that year was quoted as low as one and eight tenths—therefore the reason why the puddlers were satisfied to work for $5 per ton, and considered the same a just and equitable price for puddling. After the signing of the scale in 1879, the "boom" era started, and iron advanced rapidly until February, 1880, when it was quoted at four cents per pound, and it is a well-known fact that until the relapse in prices iron sold in advance of what it was quoted at. Yet the puddlers were paid at the quoted rates and all the large profits made by the manufacturers, as the difference between the quoted and selling price has never been considered as more than their due. In June, 1880, prices were good, and a steady, prosperous trade in prospect, and common bar averaged about one half cent per pound above what its average was a year previous; therefore the demand was asked, and conceded without dispute or stoppage. One result emanating therefrom has been the holding of the price of bar-iron more steady, and nearer to its assumed base price of two and five tenth cents per pound than it would have ranged under lower wages. Lower wages would simply mean lower prices—it is the prevailing propensity of manufacturers of bar-iron to under-bid and to under-sell their neighbors—and if a single firm be allowed the benefit of paying smaller wages to his workmen than his compeers, the result would soon by them be felt to their detriment. Now, fifty cents per ton is again demanded by the puddlers, and why? Is there any reason why bar-iron should sell below its base price of two and five tenths? It is a fair price, and one, if it could be fixed, that would allow on the average price of all sizes of iron margin enough to pay the demands of the association. Can it be fixed there? We think that no action of the manufacturers will tend to that effect as thoroughly as a concession to the association of its proposed prices. But why should we receive $6 per ton? During the past year, on certain occasions, bar-iron sold at two tenths of a cent per pound above the base figures, yet the price for puddling remained stationary. During the period when iron brought that high figure, the manufacturers repeatedly met and decided not to advance the quoted price. This action brought to them a margin upon which the puddler was properly entitled to an advance in wages. During the next two years there is as good prospect for a flourishing trade in the iron business as there was a year ago, and prices are likely to advance higher than during the past year, and manufacturers just as likely to take advantage thereof. We claim that a steady trade, with average prices above two and five tenths, as during the past two years—which was not anticipated two years ago, when the fifty cents per ton were demanded—will allow profits enough to justify the present demands of the association. There is no known real reason why bar-iron, during the next year, should sell below prices, on the average, that would justify the puddlers' receiving wages that would help them, in a measure, to meet the increased cost of living, above what it was two years ago, when $5 50 was submitted as "a just and equitable price for puddling."

The schedule of wages you give does not show what proportion of profits we have been receiving, nor does it prove that we have been receiving an undue proportion of the same, based upon the agreement of 1880. It merely states the wages each class of workers can earn *per diem.* by working full time, and that the puddler receives here less wages than is paid for the same class of labor in other mills, whose trade comes in competition with yours. That schedule also proves that the puddler is far from being the best paid mechanic in the mills. Let consideration be given to the length of time required to become proficient at this occupation, the skill and deftness he must exercise thereat, the arduous character thereof, the intense heat in which he toils for two thirds of the year, the physical exhaustion attendant and the loss of time incurred in consequence, and we think that any impartial judge would concede that the puddler receives nothing in excess of what he merits. We contend, that every occupation in the mill gives adequate return for all it receives, and the puddler is ready at all times to sacrifice his own interest to maintain that proposition. The advance now asked for is from the profits that will be deducted from the iron trade during the next two years by the manufacturers. On every hand we have every evidence that a prosperous business is anticipated. The capacity and facilities for production have been extended and improved in nine tenths of the iron mills of the country, and that fact, with the large dividends that some iron firms have declared, shows that the trade has not been so very unprofitable during the past year.

The association to which we belong is a mutual concern. Its laws, rulings, and demands result from the concurrent action and consent of the whole body, and having equal representation therein with other localities, we find it preferable to have our actions controlled thereby, than by the arbitrary will of the manufacturers, whose interests, in the way of the division of profits, cannot be said to be identical with our own. While the association has proven, (and your circular furnishes proof,) that it does take into consideration, when fixing prices, the advantages one locality may possess over another for manufacturing iron, it does not admit that the difference in the cost of living should have any weight as favoring one locality against another, when the cost thereof has advanced in the same proportion wherever the advanced wages are demanded. If living is cheaper here than in other localities we do not find it to be the result of any doings on the part of the firm for which we have labored, therefore we cannot admit that it is entitled to any profits therefrom upon what it produces However, we claim that the cost of living is no cheaper here than in other localities west of Pittsburgh where iron is manufactured. Fuel is on an average dearer, house rents in this city have increased in about the same ratio as in other iron centers, from twenty to eighty per cent., and the firm we address, not failing to take advantage of the upper tendency of prices, decided that it would be reasonable enough to advance its own tenements to its employés twenty per cent. above the rentage of the past year, and that while it is a question with that same firm whether the puddler should not submit to a further reduction of twenty-five cents per ton from the already underpaid wages.

Your policy, adopted in 1879, of employing non-union men only, was abandoned because in your effort to secure a full complement of workmen profitable to employ, men formerly members of the association were and *had* to be employed. It is worthy of remark that the workmen so frequently discharged under that policy for incompetency, and other like causes, were such as openly disavowed union principles, and all those retained until a full set of competent workmen were secured in every case were men who, on the other hand, candidly acknowledged union sentiments Since the union has been established here the class of workmen employed, and the workmanship turned out, will compare favorably with that of any other mill in the country, and yet the firm will return to the policy of three years ago, abandoned then because of its unprofitableness. From our experience—and some of us have had considerable—we judge it will pay the firm best to pay full rates to their present employés rather than take the cost and trouble of scouring the country over for that class of workmen who will think it no disgrace to comply with the terms of your circular in order to obtain a living. It may be to the interest of such men to work for you, well knowing that their incompetency can find no other shelter, but that it will be to the interest of the firm to employ them is very doubtful. We are resolved to sign no contract whatsoever, be its terms what they may. No firm or employer has the right to ask as much of any man. Free men as we are we intend to maintain our individual rights to which the law of our Commonwealth entitles us. We are competent, and will bargain to render a full equivalent in labor for the remuneration we expect to receive, and no firm is entitled to demand anything more for what it bargains to pay. We will contract to sell our labor for pay, but not therewith our legal rights and personal privileges. And while we shall not attempt to prevent the firm exercising its privilege of employing whomsoever it can upon the system it proposes, we shall continue to hold the right of disposing of our labor in a collective manner upon terms satisfactory to each one assenting to the agreement. Instead of having proved that our connection with the association makes "it impracticable for you to successfully carry on your business in this place," we believe it has been a help in enabling you to do so, and will be more so in the future than in the past, and we regret that any difference relative to our connection therewith should now exist between us, but we consider it our safest and best course to hold that connection good. As union men we shall quietly and complacently await the result of your decision, hoping, of course, that it will terminate in our favor, and that all dispute in the end will be amicably adjusted. MASSASSAUGA LODGE, No. 35, PA., A. A. OF I. & S. W.

ERIE, PA., *July 7, 1882.*

No attempt to operate the mill was made until the close of the month, when, after the completion of needed repairs, a start was made substantially upon the terms set forth in the circular of the company, and while the association made strenuous efforts to persuade men from resuming upon terms other than those dictated by them, the works continued in operation without any serious difficulty.

In the early part of July, rumor was rife that the "finishers" were about to withdraw from the association. This rumor was based partially upon the knowledge that they did not expect or seek an advance, but more particularly from the fact that they had separate meetings, one at Youngstown, Ohio, and subsequently one at Pittsburgh. The latter contained delegates from the first, second, and sixth districts. The result was made public that the report of the contemplated withdrawal was unwarranted, as they passed a resolution approving the demand sought by the new scale. The real object of the meeting, however, was to consult upon and devise measures looking to a more equal representation, both upon committees and in conventions. The complaint was common that in the enactment of rules and regulations in conventions, they were invariably outnumbered by the puddlers, and thus forced at times to submit to measures contrary to their own judgment. No alteration could be made, except at the national convention of the association, and as the annual meeting was to be held at Chicago in August, it was necessary to prepare a line of action. Thus the strike continued with alternating hopes and despondent fears as to its speedy termination. The national convention met at Chicago, and resolved to continue the struggle. Dilworth, Porter & Co., of Pittsburgh, and one or two others had signed the scale, but their effect was but slight, as they did not operate the departments wherein the advance was demanded. The vast works of the Cleveland Rolling-Mill Company, at Newburg, Ohio, had gone into operation with non-union men, and now the National Tube Company, at McKeesport, were attempting to do likewise. Their efforts were also successful, although not without such difficulties as required men to be escorted to and from their work. Several serious disturbances occurred, and a number were arrested for conspiracy. Wilson, Walker & Co. succeeded in starting their hammer and bumper shops with quite a large number of men. It was claimed by some that the starting of this department was sanctioned by the officials of the association, but again denied. Subsequently an attempt was made to prevail upon the men who had resumed to again quit work, but, with few exceptions, the effort was a failure. Under similar circumstances, a number of men resumed work at the Fort Pitt works of Graff, Bennett & Co., and also in one or two other establishments. This and the heavy drain upon the funds of the association, consequent upon the unexpected prolongation of the struggle, began to have a serious effect upon those still upon strike. Individual workmen, through the daily press, began to denounce the strike, and openly assailed the persons prominently identified in conducting it. Others, while not so open, began to agitate the propriety of its discontinuance.

In order to ascertain how far these persons expressed the will of the lodges of the district, and in conformity with the regulations, the president issued a call for a delegate meeting of the first district, to be held at Pittsburgh, on Monday, September 4. At this meeting fifty-eight out of the sixty-three lodges in the district were represented. By virtue of a recent law enacted at the convention in Chicago, the vote for or against continuing the strike for the amended scale was taken by a written ballot. The result was overwhelmingly in favor of its continuance, followed by a vote declaring it unanimous. Thus the strike obtained an apparently new lease of life, but it brought no inspired hope of success. The manufacturers remained firm in their protest against paying the rates demanded, while those who had already resumed were constantly increasing their force of workmen. Dissensions in the ranks of those upon strike became greater as their means of subsistence vanished, and the funds in the treasury became depleted. The "finishers," more than others, began to weary over a reign of idleness in a struggle that, if won, would be of no individual advantage to them. Their dissatisfaction finally culminated in a call for a meeting of "finishers" only. This meeting was held on the 13th of September, at which a resolution was passed in favor of ending the strike. This was an important step, and indicated that very soon many of the finishing departments would be at work, especially in such of those establishments that had a quantity of puddled bar on hand. This action of the "finishers" was instrumental in the convening of a similar meeting of the puddlers upon the following day. Upon deliberation, they agreed to resume work at $5 75 per ton, which was a compromise between the old price and the one demanded. With this proposition, they sought an interview with the manufacturers' committee the succeeding day. The conference was granted, but the compromise price asked for was refused. President Jarrett, of the Amalgamated Association, then issued a call for a delegate meeting of the first, second, and sixth districts to meet on the 9th, at Pittsburgh, Wheeling, and Youngstown. The respective meetings were composed of two delegates from each lodge, representing both puddling and finishing departments. Ballots, with old and new scale written thereon, were cast, and the result was, in Pittsburgh, for old, eighty-one; for the new, twenty-seven; Wheeling, old, seventeen; new, eighteen; Youngstown, forty-eight for the old and eight for the new, making the total vote for the old one hundred and forty-six and fifty-three for the new, thus showing a majority of ninety-three in favor of ending the strike and resuming work at the old rates. The result having been obtained, the committee again met the manufacturers' committee. The old scale was renewed and the strike terminated. Thus ended the great iron and steel strike of 1882 that had extended over a period of sixteen weeks. Since the adoption of scales, in 1867, (which were the first that had any permanency,) it was the second general strike that had occurred, showing that while this system, beyond a doubt, is the best method to regulate wages, that has as yet been introduced, it is not an absolute barrier against strikes. Difficulties will arise occasionally as to the basis upon which these scales should be fixed, but as this necessarily involves a discussion of the cost, selling price, and profit upon iron, these contentions naturally must be "few and far between."

### Miscellaneous.

The stove molders employed in the leading stove foundries of Pittsburgh, upon the refusal of their demand for an advance of ten per cent. in their wages, went on strike upon the 1st of February. After remaining idle for two weeks, they went to work upon a compromise of five per cent. advance.

A strike on account of wages occurred at the "Easton Mills" of John W. Elliott & Brother, Philadelphia, extending from March 1 to April 1. It resulted in the employés resuming work at wages "proportionately less than before it occurred."

Upon the 11th of August, a strike was inaugurated at the carpet works of J. Bromley & Son, Philadelphia. This firm had embarked in the manufacture of a new class of rugs, and it became necessary to fix a price upon the labor required. The firm named a rate they proposed paying, which the employés rejected and refused to work. The strike continued until September 1, when the men resumed work upon the terms offered by the firm.

From the middle until the close of the month of September, there was a strike at Kelleyville mills, Delaware county, against a reduction in wages of five per cent. The company claimed that as the machinery was old and the production much less than in modern establishments of this character, it necessitated economy in running expenses, which at first was objected to by the hands, but finally accepted.

The glass trade was not materially interrupted by any protracted strikes during the year. The finishing boys employed at the Keystone Flint Glass Works, of Pittsburgh, and those in the employ of Challinor, Hogan & Co., struck, in August, for an advance of ten cents per day. After a period of two weeks' idleness, those employed at the Keystone works returned to work at former rates, while the other firm conceded the advance asked for.

The foregoing embraces a brief synopsis of the cause, duration, and results of strikes that have taken place in the leading industrial centers of the State during 1882. The year was a remarkable one in this particular, as the number of strikes greatly exceeded that of the preceding ones. Strikes not only occurred among the iron and steel industries, but in almost every other trade with which they are closely allied, and extending, also, to the boot and shoe, lumbering, tanneries, and other classes of manufacture. Very many of them were occasioned from causes too trifling for enumeration, and if those who engaged in them had given the matter proper reflection, at the proper time, they probably would not have occurred. The result was they did not last long, the greater proportion extending from one to ten days, and resuming work without securing the object sought for.

Since the convening of the Legislature of 1883, the Senate has passed a bill, introduced by Senator Wallace, providing for the formation of "Voluntary Tribunals," to whom questions in dispute between employer and employé may be referred for adjudication and settlement. The main provisions of this proposed law have been in practice among the iron and steel industries for many years, the only feature untried being that of final reference to an umpire. As the proposed act is purely voluntary in its operations, it is hoped that it may become a law, and prove instrumental in preventing the recurrence of struggles that have so frequently paralyzed trade, and produced want and misery. If, upon trial, it should fail to accomplish what is so much desired, it may still be the means of begetting a more suitable one, to the end that those who are parties to both sides may arrive at better conclusions, and assume more equitable relations.

From reports received, and facts gathered, during the year, the following classification of industries is made, showing the number of persons engaged, together with an estimate of the amount of wages lost by strikes:

| INDUSTRIES. | Number of persons engaged. | Estimated loss in wages. |
|---|---|---|
| Anthracite coal, | 1,214 | $10,300 00 |
| Bituminous coal, | 11,897 | 793,298 00 |
| Blast furnaces, | 250 | 3,000 00 |
| Rolling-mills, | 19,379 | 3,028,550 00 |
| All other industries, | 4,244 | 12,641 00 |
| Total, | 36,984 | $3,847,789 00 |

**A TABLE** *showing the average selling price of bar-iron from 1844 to 1882, inclusive, and the price paid for boiling in the city of Pittsburgh from the date of the introduction of that method of making iron, in 1837, down to the present.*

[A TON is uniformly 2,240 pounds in this compilation.]

| Year. | MONTH. | Price of bar-iron per ton. | Price paid for boiling per ton. |
|---|---|---|---|
| 1837 | ... | ... | $7 00 |
| 1838 | ... | ... | 7 00 |
| 1839 | ... | ... | 6 50 |
| 1840 | ... | ... | 6 00 |
| 1841 | ... | ... | 5 50 |
| 1842 | ... | | 5 00 |
| 1844 | ... | $85 62 | 5 00 |
| 1845 | ... | 93 75 | 6 00 |
| 1846 | ... | 91 66 | 6 00 |
| 1847 | ... | 86 04 | 6 00 |
| 1848 | ... | 79 33 | 6 00 |
| 1849 | ... | 67 50 | 6 00 |
| 1850 | ... | 59 54 | 4 50 |
| 1851 | ... | 54 66 | 4 50 |
| 1852 | ... | 58 79 | 4 50 |
| 1852 | October, | 56 00 | 4 50 |
| 1853 | March, | 100 80 | 4 50 |
| | June, | 100 80 | 4 50 |
| | September, | 78 40 | 5 00 |
| 1854 | September, | 78 40 | 5 00 |
| 1855 | February, | 78 40 | 4 00 |
| | March, | 67 20 | 4 00 |
| | May, | .. | 4 50 |
| 1856 | March, | 61 60 | 4 50 |
| 1857 | February, | 95 20 | 4 50 |
| 1858 | February, | 95 20 | 3 50 |
| | November, | | 3 25 |
| 1859 | March, | 95 20 | 3 75 |
| | October, | 61 60 | 3 75 |
| 1860 | February, | 50 40 | 3 75 |
| | May, | 95 20 | 3 75 |
| | July, | 89 60 | 3 75 |
| | August, | 95 20 | 3 75 |
| | September, | 95 20 | 3 75 |
| | December, | . | 4 00 |
| 1861 | January, | 50 40 | 4 00 |
| | February, | | 3 75 |
| | October, | 50 40 | 3 56 |
| 1862 | April, | 100 80 | 4 00 |
| | July, | 61 60 | 4 50 |
| | August, | 67 20 | 4 50 |
| | September, | | 5 00 |
| | October, | 72 80 | 5 00 |
| | December, | 89 60 | 5 00 |
| 1863 | February, | 95 20 | 5 50 |
| | May, | ... | 6 00 |
| 1863 | August, | $95 20 | $6 00 |
| | September, | 95 20 | 6 00 |
| | December, | 123 20 | 6 50 |
| 1864 | January, | 134 40 | 6 50 |
| | February, | 134 40 | 6 50 |
| | March, | 145 60 | 6 50 |
| | May, | 156 80 | 7 00 |
| | May, | 156 80 | 7 50 |
| | June, | 156 80 | 8 00 |
| | September, | 156 80 | 9 00 |
| | December, | 168 00 | 9 00 |
| 1865 | January, | | 8 00 |
| | March, | 123 20 | 7 00 |
| | May, | | 6 00 |
| | August, | 103 48 | 5 75 |
| | September, | 123 20 | 8 00 |
| 1866 | July, | 112 00 | 8 00 |
| | November, | 112 00 | 9 00 |
| 1867 | August, | 100 80 | 8 00 |
| | October, | 95 20 | 7 50<br>7 25 |
| 1868 | January, | .. | 6 75 |
| | February, | 78 40 | 6 75 |
| | March, | 84 00 | 6 75 |
| 1869 | ... | 78 40 | 6 75 |
| 1870 | June, | 72 80 | 6 25 |
| 1871 | July, | 72 80 | 6 25 |
| | September, | 78 40 | 6 50 |
| 1872 | January, | 85 12 | 6 75 |
| | February, | 92 96 | 7 00 |
| | March, | 100 80 | 7 50 |
| | April, | 107 52 | 7 75 |
| | July, | 112 00 | 8 00 |
| | August, | 112 00 | 8 00 |
| | September, | 116 48 | 8 00 |
| | December, | 103 04 | 7 50 |
| 1873 | June, | 85 12 | 6 75 |
| | October, | 73 92 | 6 25 |
| 1874 | March | 67 20 | 6 00 |
| | December, | 56 00 | 6 00 |
| 1875 | January, | 56 00 | 6 00 |
| | August, | 56 00 | 5 50 |
| | November, | 56 00 | 5 50 |
| 1876 | March, | 56 00 | 4 75 |
| | April, | 56 00 | 4 75 |
| | June, | .. | 5 00 |
| 1877 | February, | $44 80 | $5 00 |
| | April, | 39 20 | 5 00 |
| 1877 | April, | 44 80 | 5 00 |
| | October, | 44 80 | 5 00 |
| | December, | 44 80 | 5 00 |
| 1878 | January, | 44 80 | 5 00 |
| | December, | 44 80 | 5 00 |
| 1879 | January, | 39 20 | 5 00 |
| | January, | 35 84 | 5 00 |
| | July, | 42 56 | 5 00 |
| | August, | 56 00 | 5 00 |
| | September, | 67 20 | 5 50 |
| | December, | 76 16 | 5 50 |
| 1880 | January, | 78 40 | 6 00 |
| | February, | 89 60 | 7 00 |
| | March, | 89 60 | 7 00 |
| | April, | 71 68 | 5 70 |
| | May, | 56 00 | 5 00 |
| | August, | 50 40 | 5 50 |
| 1881 | January, | 50 40 | 5 50 |
| | January, | 47 04 | 5 50 |
| | February, | 47 04 | 5 50 |
| | February, | 57 12 | 5 50 |
| | March, | 47 04 | 5 50 |
| | March, | 50 40 | 5 50 |
| | April, | 50 40 | 5 50 |
| | April, | 48 16 | 5 50 |
| | May, | 48 16 | 5 50 |
| | May, | 50 40 | 5 50 |
| | June, | 50 40 | 5 50 |
| | July, | 50 40 | 5 50 |
| | July, | 53 76 | 5 50 |
| | August, | 53 76 | 5 50 |
| | August, | 56 00 | 5 50 |
| | September, | 56 00 | 5 50 |
| | October, | 56 00 | 5 50 |
| | November, | 56 00 | 5 50 |
| | December, | 56 00 | 5 50 |
| 1882 | January, | 56 00 | 5 50 |
| | March, | 53 76 | 5 50 |
| | May, | 50 40 | 5 50 |
| | June, | 56 00 | 5 50 |
| | October, | 53 76 | 5 50 |
| | November, | 51 52 | 5 50 |
| | December, | 50 40 | 5 50 |
| | December, | 48 16 | 5 50 |

NOTE.—The figures given from 1854 to 1861, inclusive, are the prices paid in cash. A number of works during this period allowed twenty-five and fifty cents per ton additional, but wages were paid partly or wholly in merchandise.

During the months of July and August from 1867 to 1874, inclusive, boilers were allowed an extra or "hot dollar" in addition to above prices.

# MINING LAWS OF GREAT BRITAIN.

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## Chapter 76.

An Act to consolidate and amend the Acts relating to the Regulation of Coal Mines and certain other Mines.

[10th August 1872.]

WHEREAS it is expedient to consolidate and amend the law relating to the regulation and inspection of coal mines and certain other mines:

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

### *Preliminary.*

1. This Act may be cited as "The Coal Mines Regulation Act, 1872."

2. This Act, except as herein-after provided, shall not come into operation in England and Scotland until the first day of January one thousand eight hundred and seventy-three, and in Ireland until the first day of January one thousand eight hundred and seventy-four, which dates are in this Act respectively referred to as the commencement of this Act.

3. This Act shall apply to mines of coal, mines of stratified iron-stone, mines of shale, and mines of fire-clay.

## PART I.

### *Employment of Women, Young Persons, and Children.*

4. No boy under the age of ten years, and no woman or girl of any age, shall be employed in or allowed to be for the purpose of employment in any mine to which this Act applies below ground.

5. A boy of the age of ten and under the age of twelve years shall not be employed in or allowed to be for the purpose of employment in any mine to which this Act applies below ground, except in a mine in which a Secretary of State, by reason of the thinness of the seams of such mines, considers such employment necessary, and by order, published as he may think fit, for the time being allows the same, nor in such case

(*a.*) for more than six days in any one week; or,

(*b.*) if he is employed for more than three days in any one week for more than six hours in any one day; or,

(*c.*) in any other case for more than ten hours in any one day; or,

(*d.*) otherwise than in accordance with the regulations hereinafter contained.

6. A boy of the age of twelve and under the age of thirteen years, and a male young person under the age of sixteen years, shall not be employed in or allowed to be for the purpose of employment in any mine to which this Act applies below ground for more than fifty-four hours in any one week, or more than ten hours in any one day, or otherwise than in accordance with the regulations herein-after contained.

7. For the purpose of the provisions of this Act with respect to the employment of boys and male young persons in a mine below ground, the following regulations shall have effect; that is to say,

(1.) There shall be allowed an interval of not less than eight hours between the period of employment on Friday and the period of employment on the following Saturday, and in other cases of not less than twelve hours between each period of employment:

(2.) The period of each employment shall be deemed to begin at the time of leaving the surface, and to end at the time of returning to the surface:

(3.) A week shall be deemed to begin at midnight on Saturday night, and to end at midnight on the succeeding Saturday night.

8. The following regulations shall have effect with respect to boys of the age of ten and under the age of twelve years employed in any mine to which this Act applies below ground:

(1.) Every such boy shall attend school for at least twenty hours in every two weeks during which he is so employed:

(2.) In computing for the purpose of this Act the time during which a boy has attended school, there shall not be included any time during which such boy has attended either,

(*a.*) in excess of three hours at any one time, or in excess of five hours on any one day, or in excess of twelve hours in any one week; or,

(*b.*) on Sundays; or

(*c.*) before eight o'clock in the morning or after six o'clock in the evening:

Provided that the non-attendance of any boy at school shall be excused—

(1.) For any time during which he is certified by the principal teacher of the school to have been prevented from attendance by sickness or other unavoidable cause:

(2.) For any time during which the school is closed for the customary holidays, or for some other temporary cause; and

(3.) For any time during which there is no school which the boy can attend within two miles (measured according to the nearest road) from the residence of such boy or the mine in which he works.

The immediate employer of a boy in every mine to which this Act applies, who has employed such boy for any time amounting in the whole to not less than fourteen days, shall on Monday in every week during the employment of such boy obtain from the principal teacher of some school a certificate that the boy so employed has in manner required by this Act attended school during the preceding week, if attendance at school was so required during that week.

The certificate may be in such form as a Secretary of State may from time to time prescribe.

The immediate employer, where he is not the owner, agent, or manager of the mine, shall deliver such certificate to the owner, agent, or manager of the mine, and the owner, agent, or manager shall obtain the delivery of such certificate, and shall keep any certificate obtained or delivered in pursuance of this section for six months in the office at the mine, and shall produce the same to any inspector under this Act at all reasonable times when required by him during that period, and allow him to inspect and copy the same.

Every person who forges or counterfeits any certificate required by this section, or gives or signs any such certificate falsely, or wilfully makes use of any forged, counterfeit, or false certificate, shall be liable on conviction to imprisonment for a period not exceeding three months, with or without hard labour.

9. The principal teacher of a school which is attended by any boy employed in a mine to which this Act applies, may apply in writing to the person who pays the wages of such boy to pay such sum as herein-after mentioned on account of any boy in respect of whom he may have duly granted a certificate in pursuance of this Act, and after the date of such application, such person, so long as he employs the boy, shall pay to the principal teacher of the said school, for every week that the boy attends that school, the weekly sum specified in the application, not exceeding twopence per week, and not exceeding one twelfth part of the wages of the boy, and may deduct the sum so paid by him from the wages payable for the services of such boy.

Any person who after such application refuses to pay on demand any sum that may become due as aforesaid shall be liable to a penalty not exceeding ten shillings.

10. If an inspector under this Act is satisfied by inspection of a school or otherwise that the principal teacher of a school who grants certificates of school attendance required under this Act ought to be disqualified for granting such certificates for any of the following reasons; namely,

(1.) Because he is unfit to instruct children by reason either of his ignorance or neglect, or of his not having the necessary books and materials:

(2.) Because of his immoral conduct: or,

(3.) Because of his continued neglect to fill up proper certificates of school attendance:

in any such case he may serve on the teacher a written notice stating the reason for such disqualification. At the expiration of two weeks from the date of such notice the teacher shall, subject to the appeal herein-after mentioned, be disqualified for granting certificates.

The inspector shall, so far as he can, serve on every employer of a child who obtains certificates from such teacher a notice to the like effect as the notice served on the teacher, and also specifying a school which the child employed by such employer can attend within two miles (measured according to the nearest road) from the place of employment or the residence of the child.

Any teacher who is disqualified as aforesaid, and any employer who obtains certificates from him, may within three weeks after the service of the notice on the teacher, appeal therefrom to the Education Department, who may confirm or reverse such disqualification.

After a teacher is disqualified for granting certificates, no certificate given by him shall be deemed to be a certificate in compliance with this Act, unless in the case of there being no other school which the child employed in a mine can attend within two miles (measured according to the nearest road) from the mine or the residence of such child, or unless with the written consent of an inspector under this Act.

The inspectors under this Act shall in their reports to a Secretary of State report the name of every teacher disqualified under this section during the preceding twelve months, the name of the school at which he taught, and such last-mentioned report shall be communicated to the Committee of Council on Education.

11. The following regulation shall apply to every boy of ten and under twelve years of age, employed below ground in any mine to which this Act applies:

The parent, guardian, or person having the custody of or control over any such boy shall cause him to attend school in accordance with the regulations of this Act:

Every such parent, guardian, or person who wilfully fails to act in conformity with this section, shall be liable to a penalty of not more than twenty shillings for each offence.

12. With respect to women, young persons, and children employed above ground, in connection with any mine to which this Act applies, the following provisions shall have effect:

(1.) No child under the age of ten years shall be so employed:

(2.) The regulations of this Act with respect to boys of ten and under twelve years of age shall apply to every child so employed:

(3.) The regulations of this Act with respect to male young persons under sixteen years of age shall apply to every woman and young person so employed:

(4.) No woman, young person, or child shall be so employed between the hours of nine at night and five on the following morning, or on Sunday, or after two o'clock on Saturday afternoon:

(5.) Intervals for meals shall be allowed to every woman, young person, and child so employed, amounting in the whole to not less than half an hour during each period of employment which exceeds five hours, and to not less than one hour and a half during each period of employment which exceeds eight hours.

The provisions of this clause as to the employment of women, young persons, and children after two o'clock on Saturday afternoons, shall not apply in the case of any mine in Ireland, so long as it is exempted in writing by a Secretary of State.

13. The owner, agent, or manager of every mine to which this Act applies shall keep in the office at the mine a register, and shall cause to be entered in such register the name, age, residence, and date of first employment of all boys under the age of twelve years, and of the age of twelve and under the age of thirteen years, and of all male young persons under the age of sixteen years who are employed in the mine below ground, and of all women, young persons, and children employed above ground in connection with the mine, and a memorandum of the certificates of the school attendance of such boys obtained in pursuance of this Act, and shall produce such register to any inspector under this Act at the mine at all reasonable times when required by him, and allow him to inspect and copy the same.

The immediate employer of every boy or male young person of the ages aforesaid, other than the owner, agent, or manager of the mine, before he causes such boy or male young person to be in any mine to which this Act applies below ground, shall report to the manager of such mine, or some person appointed by such manager, that he is about to employ him in such mine.

14. Where there is a shaft or an inclined plane or level in any mine to which this Act applies, whether for the purpose of an entrance to such mine or of a communication from one part to another part of such mine, and persons are taken up or down or along such shaft, plane, or level by means of any engine, windlass, or gin, driven or worked by steam or any mechanical power, or by an animal, or by manual labour, a person shall not be allowed to have charge of such an engine, windlass, or gin, or of any part of the machinery, ropes, chains, or tackle connected therewith, unless he is a male of at least eighteen years of age.

Where the engine, windlass, or gin is worked by an animal, the person under whose direction the driver of the animal acts shall, for the purposes of this section, be deemed to be the person in charge of the engine, windlass, or gin, but such driver shall not be under twelve years of age.

15. If any person contravenes or fails to comply with, or permits any person to contravene or fail to comply with, any provision of this Act with respect to the employment of women, girls, young persons, boys, or children, or to the attendance of boys at school, or to the register of boys and male young persons, or of women, young persons, and children, or to the reporting the intended employment of boys or male young persons, or to the employment of persons about any engine, windlass, or gin, he shall be guilty of an offence against this Act; and in case of any such contraven-

tion or non-compliance by any person whomsoever, the owner, agent, and manager shall each be guilty of an offence against this Act, unless he prove that he had taken all reasonable means by publishing and to the best of his power enforcing the provisions of this Act to prevent such contravention or non compliance.

If it appear that a child, boy, or young person, or a person employed about an engine, windlass, or gin, was employed on the representation of his parents or guardian that he was of that age at which his employment would not be in contravention of this Act, and under the belief in good faith that he was of that age, the owner, agent, or manager of the mine and employer shall be exempted from any penalty, and the parent or guardian shall, for such misrepresentation, be deemed guilty of an offense against this Act.

### *Wages.*

16. No wages shall be paid to any person employed in or about any mine to which this Act applies at or within any public house, beer shop, or place for the sale of any spirits, beer, wine, cyder, or other spirituous or fermented liquor, or other house of entertainment, or any office, garden, or place belonging or contiguous thereto, or occupied therewith.

Every person who contravenes or fails to comply with or permits any person to contravene or fail to comply with this section shall be guilty of an offence against this Act; and in the event of any such contravention or non-compliance by any person whomsoever, the owner, agent, and manager shall each be guilty of an offence against this Act, unless he prove that he had taken all reasonable means by publishing and to the best of his power enforcing the provisions of this section to prevent such contravention or non-compliance.

17. Where the amount of wages paid to any of the persons employed in a mine to which this Act applies depends on the amount of mineral gotten by them, such person shall, after the first day of August one thousand eight hundred and seventy-three, unless the mine is exempted by a Secretary of State, be paid according to the weight of the mineral gotten by them, and such mineral shall be truly weighed accordingly.

Provided always, that nothing herein contained shall preclude the owner, agent, or manager of the mine from agreeing with the persons employed in such mine that deductions shall be made in respect of stones or materials other than mineral contracted to be gotten, which shall be sent out of the mine with the mineral contracted to be gotten, or in respect of any tubs, baskets, or hutches being improperly filled in those cases where they are filled by the getter of the mineral or his drawer, or by the person immediately employed by him, such deductions being determined by the banksman or weigher and check weigher (if there be one), or in case of difference by a third party to be mutually agreed on by the owner, agent, or manager of the mine on the one hand, and the persons employed in the mine on the other.

Where it is proved to the satisfaction of a Secretary of State that by reason of any exigencies existing in the case of any mine or class of mines to which the foregoing provision in this section applies, it is requisite or expedient that the persons employed in such mine or class of mines should not be paid by the weight of the mineral gotten by them, or that the beginning of such payment by weight should be postponed, such Secretary of State may, if he think fit, by order exempt such mine or class of mines from the provisions of this section, either without condition or during the time and upon the conditions specified in the order, or postpone in such mine or class of mines the beginning of such payment by weight, and may from time to time revoke or alter any such order.

If any person contravenes or failes to comply with, or permits any person to contravene or fail to comply with, this section, he shall be guilty of an offence against this Act; and in the event of any contravention of or non-compliance with this section by any person whomsoever, the owner, agent, and manager shall each be guilty of an offence against this Act, unless he prove that he had taken all reasonable means by publishing and to the best of his power enforcing the provisions of this section to prevent such contravention and non-compliance.

18. The persons who are employed in a mine to which this Act applies, and are paid according to the weight of the mineral gotten by them, may, at their own cost, station a person (in this Act referred to as "a check weigher") at the place appointed for the weighing of such mineral, in order to take an account of the weight thereof on behalf of the persons by whom he is so stationed. The check weigher shall be one of the persons employed either in the mine at which he is so stationed or in another mine belonging to the owner of that mine. He shall have every facility afforded to him to take a correct account of the weighing for the persons by whom he is so stationed; and if in any mine proper facilities are not afforded to the check weigher as required by this section, the owner, agent, and manager of such mine shall each be guilty of an offence against this Act, unless he prove that he had taken all reasonable means by enforcing to the best of his power the provisions of this section to prevent such contravention or non-compliance.

The check weigher shall not be authorised in any way to impede or interrupt the working of the mine, or to interfere with the weighing, but shall be authorised only to take such account as aforesaid, and the absence of the check weigher shall not be a reason for interrupting or delaying such weighing.

If the owner, agent, or manager of the mine desires the removal of a check weigher on the ground that such check weigher has impeded or interrupted the working of the mine, or interfered with the weighing, or has otherwise misconducted himself, he may complain to any court of summary jurisdiction, who, if of opinion that the owner, agent, or manager shows sufficient primâ facie ground for the removal of such check weigher, shall call upon the check weigher to show cause against his removal. On the hearing of the case the court shall hear the parties, and, if they think that at the hearing sufficient ground is shown by the owner, agent, or manager to justify the removal of the check weigher, shall make a summary order for his removal, and the check weigher shall thereupon be removed, but without prejudice to the stationing of another check weigher in his place.

The court may in every case make such order as to the costs of the proceedings as they think just.

If in pursuance of any order of exemption made by a Secretary of State, the persons employed in a mine to which this Act applies are paid by the measure or gauge of the material gotten by them, the provisions of this section shall apply in like manner as if the term "weighing" included measuring and gauging, and the terms relating to weighing shall be construed accordingly.

19. The Weights and Measures Act, or any Act for the time being in force relating to weights and measures, shall apply to the weights used in any mine to which this Act applies for determining the wages payable to any person employed in such mine according to the weight of the mineral gotten by such person, in like manner as it applies to weights used for the sale of any article, and the inspector of weights and measures for the district appointed under the said Act shall accordingly from time to time, but without unnecessarily impeding or interrupting the working of the mine, inspect and examine, in manner directed by the said Act, the weighing machines and weights used for mines to which this Act applies, or the measures or gauges used for such mines: Provided that nothing in this section shall prevent the use of the measures and gauges ordinarily used in such mine.

The term "Weights and Measures Act" in this section means—As to

(*a.*) Great Britain, the Act of the session of the fifth and sixth years of the reign of King William the Fourth, chapter sixty-three "to "repeal an Act of the fourth and fifth year of his present Majesty "relating to weights and measures, and to make other provisions "instead thereof;" and,

(*b.*) As to Ireland, the Weights and Measures (Ireland) Amendment Act, 1862, as amended by the Act of the session of the thirtieth and thirty-first years of the reign of Her present Majesty, chapter ninety-four, "to provide for the inspection of weights and "measures, and to regulate the law relating thereto in certain "parts of the police district of Dublin Metropolis."

### *Single Shafts.*

20. After the commencement of this Act the owner, agent, or manager of a mine to which this Act applies shall not employ any person in such mine, or permit any person to be in such mine for the purpose of employment

therein, unless there are in communication with every seam of such mine for the time being at work at least two shafts or outlets, separated by natural strata of not less than ten feet in breadth, by which shafts or outlets distinct means of ingress and egress are available to the persons employed in such seam, whether such two shafts or outlets belong to the same mine, or one or more of them belong to another mine, and unless there is a communication of not less than four feet wide and three feet high between such two shafts or outlets, and unless there is at each of such two shafts or outlets or upon the works belonging to the mine and either in actual use or available for use within a reasonable time proper apparatus for raising and lowering persons at each such shaft or outlet.

Provided that such separation shall not be deemed incomplete by reason only that openings through the strata between the two shafts or outlets have been made for temporary purposes of ventilation, drainage, or otherwise; or in the case of mines where inflammable gas has not been found within the preceding twelve months for the same purposes although not temporary.

Every owner, agent, and manager of a mine who acts in contravention of or fails to comply with this section shall be guilty of an offence against this Act.

Any of Her Majesty's superior courts of law or equity, whether any other proceedings have or have not been taken, may, upon the application of the Attorney General, prohibit by injunction the working of any mine in which any person is employed, or is permitted to be for the purpose of employment, in contravention of this section, and may award such costs in the matter of the injunction as the court thinks just; but this provision shall be without prejudice to any other remedy permitted by law for enforcing the provisions of this Act.

Written notice of the intention to apply for such injunction in respect of any mine shall be given to the owner, agent, or manager of such mine not less than ten days before the application is made.

21. No person shall be precluded by any agreement from doing such acts as may be necessary for providing a second shaft or outlet to a mine, where the same is required by this Act, or be liable under any contract to any penalty or forfeiture for doing such acts as may be necessary in order to comply with the provisions of this Act with respect to shafts or outlets.

22. The provisions of this Act with respect to shafts or outlets shall not apply in the following cases; that is to say,

(1.) In the case either of opening a new mine for the purpose of searching for or proving minerals, or of any working for the purpose of making a communication between two or more shafts, so long as not more than twenty persons are employed below ground at any one time in the whole of the different seams in connexion with each shaft or outlet in such new mine or such working:

(2.) In the case of any proved mine so long as it is exempted in writing by a Secretary of State on the ground either—

(*a.*) that the quantity of mineral proved is not sufficient to repay the outlay which would be occasioned by the sinking or making of a second shaft or outlet, or

(*b.*) if the mine is not a coal mine, or mine with inflammable gas, that sufficient provision has been made against danger from other causes than explosions of gas by using stone, brick, or iron in the place of wood for the lining of the shaft and the construction of the mid wall; or

(*c.*) that the workings in any seam of a mine have reached the boundary of the property or other extremity of the mineral field of which such seam is a part, and that it is expedient to work away the pillars already formed in course of the ordinary working, notwithstanding that one of the shafts or outlets may be cut off by so working away the pillars of such seam;

and so long as there are not employed below ground at any one time in the whole of the different seams in connexion with the shaft or outlet in any such mine, more than twenty persons, or (if the mine is not a coal mine, or mine with inflammable gas) that such larger number of persons as may for the time being be allowed by a Secretary of State:

(3.) In the case of any mine one of the shafts or outlets of which has become, by reason of some accident, unavailable for the use of the persons employed in the mine, so long as such mine is exempted in writing by a Secretary of State, and as the conditions on which such exemption is granted are duly observed.

23. The provisions of this Act with respect to shafts or outlets shall not, until the first day of January one thousand eight hundred and seventy-five, apply to any mine which is not at the passing of this Act required to have two shafts or outlets.

24. If a written representation is made to a Secretary of State by the owner or agent of a mine not required at the passing of this Act to have two shafts or outlets, either—

(1.) Within six months after the commencement of this Act, alleging that by reason of the mine being nearly exhausted he ought to be exempted from the obligation of providing an additional shaft or outlet in pursuance of this Act; or,

(2.) Within six months immediately preceding the first day of January one thousand eight hundred and seventy-five, alleging that an extension of time for providing an additional shaft or outlet ought to be granted to him:

the question as to whether such exemption or extension of time ought to be granted shall be referred to arbitration, and the date of the receipt of such representation by a Secretary of State shall be deemed to be the date of the reference, and the award made upon such arbitration may exempt the owner of such mine from the obligation of providing an additional shaft or outlet, and may grant to the owner of such other mine as aforesaid such extension of time as may be specified by the award, but if the result of the arbitration is against the owner or agent, or if no award is made by reason of any default or neglect on the part of the owner or agent, the owner or agent shall be bound by the provisions of this Act as if this section had not been enacted.

### *Division of Mine into Parts.*

25. Where two or more parts of a mine are worked separately the owner or agent of such mine may give notice in writing to that effect to the inspector of the district, and thereupon each such part shall, for all the purposes of this Act, be deemed to be a separate mine.

If a Secretary of State is of opinion that the division of a mine in pursuance of this section tends to lead to the evasion of the provisions of this Act, or otherwise to prevent the carrying of this Act into effect, he may object to such division by notice served on the owner or agent of the mine; and such owner or agent, if he decline to acquiesce in such objection, may, within twenty days after the receipt of such notice, send a notice to the inspector of the district stating that he declines so to acquiesce, and thereupon the matter shall be determined by arbitration in manner provided by this Act; and the date of the receipt of the last-mentioned notice shall be deemed to be the date of the reference.

### *Certificated Managers.*

26. Every mine to which this Act applies shall be under the control and daily supervision of a manager, and the owner or agent of every such mine shall nominate himself or some other person (not being a contractor for getting the mineral in such mine, or a person in the employ of such contractor) to be the manager of such mine, and shall send written notice to the inspector of the district of the name and address of such manager.

A person shall not be qualified to be a manager of a mine to which this Act applies unless he is for the time being registered as the holder of a certificate under this Act.

If any mine to which this Act applies is worked for more than fourteen days without there being such a manager for that mine as is required by this section, the owner and agent of such mine shall each be liable to a penalty not exceeding fifty pounds, and to a further penalty not exceeding ten pounds for every day during which such mine is so worked.

Provided that—

(*a*.) The owner of such mine shall not be liable to any such penalty if he prove that he had taken all reasonable means by the enforcement of this section to prevent the mine being worked in contravention of this section:

(*b*.) If for any reasonable cause there is for the time being no manager of a mine qualified as required by this section, the owner or agent of such mine may appoint any competent person not holding a certificate under this Act to be manager, for a period not exceeding two months, or such longer period as may elapse before such person has an opportunity of obtaining by examination a certificate under this Act, and shall send to the inspector of the district a written notice of the name and address of such manager, and of the reason of his appointment; and

(*c.*) A mine in which less than thirty persons are ordinarily employed below ground, or of which the average daily out-put does not exceed twenty-five tons, shall be exempt from the provisions of this section, unless the inspector of the district, by notice in writing served on the owner or agent of such mine, requires the same to be under the control of a manager.

27. For the purpose of granting in any part of the United Kingdom, to be from time to time defined by an order in writing made by a Secretary of State, certificates of competency to managers of mines for the purposes of this Act, examiners shall be appointed by a board constituted as hereinafter mentioned.

A Secretary of State may from time to time appoint, remove, and reappoint fit persons to form such board as follows; namely, three persons being owners of mines to which this Act applies in the said part of the United Kingdom, and three persons employed in or about a mine to which this Act applies in the said part of the United Kingdom, not being owners, agents, or managers of a mine, and three persons practising as mining engineers, agents, or managers of mines, or coal viewers in the said part of the United Kingdom, and one inspector under this Act; the persons so appointed shall during the pleasure of the Secretary of State form the board for the purposes of the said examinations in the said part of the United Kingdom.

28. The proceedings of the board shall be in accordance with the rules contained in Schedule Two to this Act; the board shall from time to time appoint examiners, not being members of the board, except with the consent of the Secretary of State, to conduct the examinations in the part of the United Kingdom for which such board acts, of applicants for certificates of competency under this Act, and may from time to time make, alter, and revoke rules as to the conduct of such examinations and the qualifications of the applicants, so, however, that in every such examination regard shall be had to such knowledge as is necessary for the practical working of mines in the said part of the United Kingdom; every such board shall make from time to time to a Secretary of State a report and return of their proceedings, and of such other matters as a Secretary of State may from time to time require.

29. A Secretary of State may from time to time make, alter, and revoke rules as to the places and times of examinations of applicants for certificates of competency under this Act, the number and remuneration of the exam-

iners, and the fees to be paid by the applicants, so that the fees do not exceed those specified in Schedule One to this Act. Every such rule shall be duly observed by every board appointed under this Act to whom it applies.

30. A Secretary of State shall deliver to every applicant who is duly reported by the examiners to have passed the examination satisfactorily, and to have given satisfactory evidence of his sobriety, experience, ability, and general good conduct, such a certificate of competency as the case requires. The certificate shall be in such form as a Secretary of State from time to time directs, and a register of the holders of such certificates shall be kept by such person and in such manner as a Secretary of State from time to time directs.

31. Certificates of service for the purposes of this Act shall be granted by a Secretary of State to every person who satisfies him either that before the passing of this Act he was acting, and has since that day acted, or that he has at any time within five years before the passing of this Act for a period of not less than twelve months acted, in the capacity of a manager of a mine or such part of a mine as can under this Act be made a separate mine for the purposes of this Act.

Every such certificate of service shall contain particulars of the name, place, and time of birth, and the length and nature of the previous service of the person to whom the same is delivered, and a certificate of service may be refused to any person who fails to give a full and satisfactory account of the particulars aforesaid, or to pay such registration fee as the Secretary of State may direct, not exceeding that mentioned in Schedule One to this Act.

A certificate of service shall have the same effect for the purposes of this Act as a certificate of competency granted under this Act.

32. If at any time representation is made to a Secretary of State by an inspector or otherwise, that any manager holding a certificate under this Act is by reason of incompetency or gross negligence unfit to discharge his duties, or has been convicted of an offence against this Act, the Secretary of State may, if he think fit, cause inquiry to be made into the conduct of such manager, and with respect to such inquiry the following provisions shall have effect:

(1.) The inquiry shall be public, and shall be held at such place as the Secretary of State may appoint by such county court judge, metropolitan police magistrate, stipendiary magistrate, or other person or persons, as may be directed by the Secretary of State, and either alone or with the assistance of any assessor or assessors named by the Secretary of State:

(2.) The Secretary of State shall, before the commencement of the inquiry, furnish to the manager a statement of the case upon which the inquiry is instituted:

(3.) Some person appointed by the Secretary of State shall undertake the management of the case:

(4.) The manager may attend the inquiry by himself, his counsel, attorney, or agent, and may, if he think fit, be sworn and examined as an ordinary witness in the case:

(5.) The persons appointed to hold the inquiry, in this Act referred to as the court, shall, upon the conclusion of the inquiry, send to the Secretary of State a report containing a full statement of the case, and their opinion thereon, and such report of, or extracts from the evidence, as the court think fit:

(6.) The court shall have power to cancel or suspend the certificate of the manager, if they find that he is by reason of incompetency or gross negligence, or of his having been convicted of an offence against this Act, unfit to discharge his duty:

(7.) The court may, if they think fit, require a manager to deliver up his certificate, and if any manager fail, without sufficient cause to the satisfaction of the court, to comply with such requisition, he shall be liable to a penalty not exceeding one hundred pounds. The court shall hold a certificate so delivered until the conclusion of the investigation, and shall then either restore, cancel, or suspend the same, according to their judgment on the case:

(8.) The court shall have for the purpose of the inquiry, all the powers of a court of summary jurisdiction, and all the powers of an inspector under this Act:

(9.) The court may also, by summons under their hands, require the attendance of all such persons as they think fit to call before them and examine for the purpose of the inquiry, and every person so summoned shall be allowed such expenses as would be allowed to a witness attending on subpœna before a court of record; and in case of dispute as to the amount to be allowed, the same shall be referred by the court to a master of one of the superior courts, who, on request under the hands of the members of the court, shall ascertain and certify the proper amount of such expenses.

33. The court may make such order as they think fit respecting the costs and expenses of the inquiry, and such order shall, on the application of any party entitled to the benefit of the same, be enforced by any court of summary jurisdiction as if such costs and expenses were a penalty imposed by such court.

The Secretary of State may, if he think fit, pay to the members of the court of inquiry, including any assessors, such remuneration as he may with the consent of the Treasury appoint.

Any costs and expenses ordered by the court to be paid by a Secretary of State, and any remuneration paid under this section, shall be paid out of moneys provided by Parliament.

34. Where a certificate of a manager is cancelled or suspended in pursuance of this Act, a Secretary of State shall cause such cancellation or suspension to be recorded in the register of holders of certificates.

A Secretary of State may at any time, if it is shown to him to be just so to do, renew or restore, on such terms as he think fit, any certificate which has been cancelled or suspended in pursuance of this Act.

35. Whenever any person proves to the satisfaction of a Secretary of State that he has, without fault on his part, lost, or been deprived of any certificate previously granted to him under this Act, such Secretary of State shall, upon payment of such fee, if any, as he may direct, but not exceeding the fee specified in Schedule One to this Act, cause a copy of the certificate to which the applicant appears by the register to be entitled, to be made out and certified by the person who keeps the register, and delivered to the applicant, and any copy which purports to be so made and certified as aforesaid shall have all the effect of the original certificate.

36. All expenses incurred by a Secretary of State with the concurrence of the Commissioners of Her Majesty's Treasury in carrying into effect the provisions of this Act with respect to certificates of competency or service shall be defrayed out of moneys provided by Parliament.

All fees payable by the applicants for examination for or for a copy of a certificate under this Act shall be paid into the receipt of Her Majesty's Exchequer in such manner as the Treasury may from time to time direct, and be carried to the Consolidated Fund.

37. Every person who commits any of the following offences; that is to say,

(1.) Forges, or counterfeits, or knowingly makes any false statement in any certificate of competency or service under this Act, or any official copy of such certificate; or

(2.) Knowingly utters or uses any such certificate or copy which has been forged or counterfeited or contains any false statement; or

(3.) For the purpose of obtaining, for himself or any other person, employment as a certificated manager, or the grant, renewal, or restoration of any certificate under this Act, or a copy thereof, either

  (*a.*) makes or gives any declaration, representation, statement, or evidence which is false in any particular, or

  (*b.*) knowingly utters, produces, or makes use of any such declaration, representation, statement, or evidence, or any document containing the same,

shall be guilty of a misdemeanour, and be liable on conviction to imprisonment for a term not exceeding two years, with or without hard labour.

### *Returns, Notices and Abandonment.*

38. On or before the first day of February in every year the owner, agent, or manager of every mine to which this Act applies shall send to the inspector of the district on behalf of a Secretary of State a correct return, specifying, with respect to the year ending on the preceding thirty-first day of December, the quantity of coal or other mineral wrought in such mine, and the number of persons ordinarily employed in or about

such mine below ground and above ground, distinguishing the persons employed below ground and above ground, and the different classes and ages of the persons so employed whose hours of labour are regulated by this Act.

The return shall be in such form as may be from time to time prescribed by a Secretary of State, and the inspector of the district on behalf of a Secretary of State shall from time to time on application furnish forms for the purpose of such return.

The Secretary of State may publish the aggregate results of such returns with respect to any particular county or inspector's district, or any large portion of a county or inspector's district, but the individual return shall not be published without the consent of the person making the same, or of the owner of the mine to which they relate, and no person except an inspector or Secretary of State shall be entitled, without such consent, to see the same.

Every owner, agent, or manager of a mine who fails to comply with this section or makes any return which is to his knowledge false in any particular shall be guilty of an offence against this Act.

39. Where in or about any mine to which this Act applies, whether above or below ground, either

(1.) loss of life or any personal injury to any person employed in or about the mine occurs by reason of any explosion of gas, powder, or of any steam boiler; or

(2.) loss of life or any serious personal injury to any person employed in or about the mine occurs by reason of any accident whatever,

the owner, agent, or manager of the mine shall, within twenty-four hours next after the explosion or accident, send notice in writing of the explosion or accident and of the loss of life or personal injury occasioned thereby to the inspector of the district on behalf of a Secretary of State, and shall specify in such notice the character of the explosion or accident, and the number of persons killed and injured respectively.

Where any personal injury, of which notice is required to be sent under this section, results in the death of the person injured, notice in writing of the death shall be sent to the inspector of the district on behalf of a Secretary of State within twenty-four hours after such death comes to the knowledge of the owner, agent, or manager.

Every owner, agent, or manager who fails to act in compliance with this section shall be guilty of an offence against this Act.

40. In any of the following cases, namely,

(1.) Where any working is commenced for the purpose of opening a new shaft for any mine to which this Act applies;

(2.) Where a shaft of any mine to which this Act applies is abandoned or the working thereof discontinued;

(3.) Where the working of a shaft of any mine to which this Act applies is recommenced after any abandonment or discontinuance for a period exceeding two months; or

(4.) Where any change occurs in the name of, or in the name of the owner, agent, or manager of, any mine to which this Act applies, or in the officers of any incorporated company which is the owner of a mine to which this Act applies,

the owner, agent, or manager of such mine shall give notice thereof to the inspector of the district within two months after such commencement, abandonment, discontinuance, recommencement, or change, and if such notice is not given the owner, agent, or manager shall be guilty of an offence against this Act.

41. Where any mine to which this Act applies is abandoned or the working thereof discontinued, at whatever time such abandonment or discontinuance occurred, the owner thereof, and every other person interested in the minerals of such mine, shall cause the top of the shaft and any side entrance from the surface to be and to be kept securely fenced for the prevention of accidents:

Provided that—

(1.) Subject to any contract to the contrary, the owner of the mine shall, as between him and any other person interested in the minerals of the mine, be liable to carry into effect this section, and to pay any costs incurred by any other person interested in the minerals of the mine in carry this section into effect:

(2.) Nothing in this section shall exempt any person from any liability under any other Act, or otherwise.

If any person fail to act in conformity with this section, he shall be guilty of an offence against this Act.

Any shaft or side entrance which is not fenced as required by this section, and is within fifty yards of any highway, road, foot-path, or place of public resort, or is in open or uninclosed land, shall be deemed to be a nuisance within the meaning of section eight of the Nuisances Removal Act for England, 1855, as amended and extended by the Sanitary Act, 1866.

42. Where any mine to which this Act applies is abandoned, the owner of such mine at the time of such abandonment shall, within three months after such abandonment, send to a Secretary of State an accurate plan on a scale of not less than a scale of two chains to one inch, or on such other scale as the plan used in the mine at the time of such abandonment is constructed on, showing the boundaries of the workings of such mine up to the time of the abandonment, with the view of its being preserved under the care of the Secretary of State, but no person, except an inspector under this Act, shall be entitled, without the consent of the owner of the mine, to see such plan when so sent until after the lapse of ten years from the time of such abandonment.

Every person who fails to comply with this section shall be guilty of an offence against this Act.

*Inspection.*

43. A Secretary of State may from time to time appoint any fit persons to be inspectors of mines to which this Act applies, and assign them their duties, and may award them such salaries as the Commissioners of Her Majesty's Treasury may approve, and may remove such inspectors.

Notice of the appointment of every such inspector shall be published in the London Gazette.

Any such inspector is referred to in this Act as an inspector, and the inspector of a district means the inspector who is for the time being assigned to the district or portion of the United Kingdom with reference to which the term is used.

Any person appointed or acting as inspector under the Metalliferous Mines Regulation Act, 1872, if directed by a Secretary of State to act as an inspector under this Act, may so act, and shall be deemed to be an inspector under this Act.

44. Any person who practises or acts, or is a partner of any person who practises or acts as a land agent or mining engineer, or as a manager, viewer, agent, or valuer of mines, or arbitrator in any difference arising between owners, agents, or managers of mines, or is otherwise employed in or about any mine (whether such mine is one to which this Act applies or not) shall not act as an inspector of mines under this Act.

45. An inspector under this Act shall have power to do all or any of the following things; namely,

(1.) To make such an examination and inquiry as may be necessary to ascertain whether the provisions of this Act relating to matters above ground or below ground are complied with in the case of any mine to which this Act applies:

(2.) To enter, inspect, and examine any mine to which this Act applies, and every part thereof, at all reasonable times by day and night, but so as not to impede or obstruct the working of the said mine:

(3.) To examine into and make inquiry respecting the state and condition of any mine to which this Act applies, or any part thereof, and the ventilation of the mine, and the sufficiency of the special rules for the time being in force in the mine, and all matters and things connected with or relating to the safety of the persons employed in or about the mine or any mine contiguous thereto:

(4.) To exercise such other powers as may be necessary for carrying this Act into effect.

Every person who wilfully obstructs any inspector in the execution of his duty under this Act, and every owner, agent, and manager of a mine who refuses or neglects to furnish to the inspector the means necessary for making any entry, inspection, examination, or inquiry under this Act, in relation to such mine, shall be guilty of an offence against this Act.

46. If in any respect (which is not provided against by any express provision of this Act, or by any special rule) any inspector find any mine to

which this Act applies, or any part thereof, or any matter, thing, or practice in or connected with any such mine, to be dangerous or defective, so as in his opinion to threaten or tend to the bodily injury of any person, such inspector may give notice in writing thereof to the owner, agent, or manager of the mine, and shall state in such notice the particulars in which he considers such mine, or any part thereof, or any matter, thing, or practice, to be dangerous or defective, and require the same to be remedied; and unless the same be forthwith remedied the inspector shall also report the same to a Secretary of State.

If the owner, agent, or manager of the mine objects to remedy the matter complained of in the notice he may, within twenty days after the receipt of such notice, send his objection in writing, stating the grounds thereof, to a Secretary of State; and thereupon the matter shall be determined by arbitration in manner provided by this Act; and the date of the receipt of such objection shall be deemed to be the date of the reference.

If the owner, agent, or manager fail to comply either with the requisition of the notice, where no objection is sent within the time aforesaid, or with the award made on arbitration, within twenty days after the expiration of the time for objection or the time of making of the award (as the case may be,) he shall be guilty of an offence against this Act, and the notice and award shall respectively be deemed to be written notice of such offence.

Provided that the court, if satisfied that the owner, agent, or manager has taken active measures for complying with the notice or award, but has not, with reasonable diligence, been able to complete the works, may adjourn any proceedings taken before them for punishing such offence, and, if the works are completed within a reasonable time, no penalty shall be inflicted.

No person shall be precluded by any agreement from doing such acts as may be necessary to comply with the provisions of this section, or be liable under any contract to any penalty or forfeiture for doing such acts.

47. The owner, agent, or manager of every mine to which this Act applies shall keep in the office at the mine an accurate plan of the workings of such mine, and showing the workings up to at least six months previously.

The owner, agent, or manager of the mine shall produce to an inspector under this Act at the mine, such plan, and shall, if requested by the inspector, mark on such plan the progress of the workings of the mine up to the time of such production, and shall allow the inspector to examine the same; but the inspector is not hereby authorized to make a copy of any part of such plan.

If the owner, agent, or manager of any mine to which this Act applies fails to keep such plan as is prescribed by this section, or wilfully refuses to produce or allow to be examined such plan, or wilfully withholds any portion of any plan, or conceals any part of the workings of his mine, or produces an imperfect or inaccurate plan, unless he shows that he was ignorant of such concealment, imperfection, or inaccuracy, he shall be guilty of an offence against this Act; and, further, the inspector may, by notice in writing, (whether a penalty for such offence has or has not been inflicted,) require the owner, agent or manager to cause an accurate plan, such as is prescribed by this section, to be made within a reasonable time, as the expense of the owner of the mine, on a scale of not less than a scale of two chains to one inch, or such other scale as the plan then used in the mine is constructed on.

If the owner, agent, or manager fail within twenty days, or such further time as may be shown to be necessary, after the requisition of the inspector to make or cause to be made such plan, he shall be guilty of an offence against this Act.

48. Every inspector under this Act shall make an annual report of his proceedings during the preceding year to a Secretary of State, which report shall be laid before both Houses of Parliament.

A Secretary of State may at any time direct an inspector to make a special report with respect to any accident in a mine to which this Act applies, which accident has caused loss of life or personal injury to any person, and in such case shall cause such report to be made public at such time and in such manner as he thinks expedient.

### *Arbitration.*

49. With respect to arbitrations under this Act, the following provisions shall have effect:

(1.) The parties to the arbitration are in this section deemed to be the owner, agent, or manager of the mine on the one hand, and the inspector of mines (on behalf of the Secretary of State) on the other:

(2.) Each of the parties to the arbitration may, within twenty-one days after the date of the reference, appoint an arbitrator:

(3.) No person shall act as arbitrator or umpire under this Act who is employed in or in the management of or is interested in the mine to which the arbitration relates:

(4.) The appointment of an arbitrator under this section shall be in writing, and notice of the appointment shall be forthwith sent to the other party to the arbitration, and shall not be revoked without the consent of such other party:

(5.) The death, removal, or other change in any of the parties to the arbitration shall not affect the proceedings under this section:

(6.) If within the said twenty-one days either of the parties fail to appoint an arbitrator, the arbitrator appointed by the other party may proceed to hear and determine the matter in difference, and in such case the award of the single arbitrator shall be final:

(7.) If before an award has been made any arbitrator appointed by either party die or become incapable to act, or for fourteen days refuse or neglect to act, the party by whom such arbitrator was appointed may appoint some other person to act in his place; and if he fail to do so within fourteen days after notice in writing from the other party for that purpose, the remaining arbitrator may proceed to hear and determine the matters in difference, and in such case the award of such single arbitrator shall be final:

(8.) In either of the foregoing cases where an arbitrator is empowered to act singly, upon one of the parties failing to appoint, the party so failing may, before the single arbitrator has actually proceeded in the arbitration, appoint an arbitrator, who shall then act as if no failure had been made:

(9.) If the arbitrators fail to make their award within twenty-one days after the day on which the last of them was appointed, or within such extended time (if any) as may have been appointed for that purpose by both arbitrators under their hands, the matter in difference shall be determined by the umpire appointed as hereinafter mentioned:

(10.) The arbitrators, before they enter upon the matters referred to them, shall appoint by writing under their hands an umpire to decide on points on which they may differ:

(11.) If the umpire die or become incapable to act before he has made his award, or refuses to make his award within a reasonable time after the matter has been brought within his cognizance, the persons or person who appointed such umpire shall forthwith appoint another umpire in his place:

(12.) If the arbitrators refuse or fail or for seven days after the request of either party neglect to appoint an umpire, then on the application of either party an umpire shall be appointed by the chairman of the general or quarter sessions of the peace, within the jurisdiction of which the mine is situate:

(13.) The decision of every umpire on the matters referred to him shall be final:

(14.) If a single arbitrator fail to make his award within twenty-one days after the day on which he was appointed, the party who appointed him may appoint another arbitrator to act in his place:

(15.) The arbitrators and their umpire or any of them may examine the parties and their witnesses on oath, they may also consult any counsel, engineer, or scientific person whom they may think it expedient to consult:

(16.) The payment, if any, to be made to any arbitrator or umpire for his services shall be fixed by the Secretary of State, and together with the costs of the arbitration and award shall be paid by the parties or one of them according as the award may direct. Such costs may be taxed by a master of one of the superior courts, who, on the written application of either of the parties, shall ascertain and certify the proper amount of such costs. The amount, if any, payable by the Secretary of State shall be paid as part of the expenses of inspectors under this Act. The amount, if any, payable by the owner, agent, or manager may in the event of non-payment be recovered in the same manner as penalties under this Act:

(17.) Every person who is appointed an arbitrator or umpire under this section shall be a practical mining engineer, or a person accustomed to the working of mines, but when an award has been made under this section the arbitrator or umpire who made the same shall be deemed to have been duly qualified as provided by this section.

### *Coroners.*

50. With respect to coroners' inquests on the bodies of persons whose death may have been caused by explosions or accidents in mines to which this Act applies, the following provisions shall have effect:

(1.) Where a coroner holds an inquest upon a body of any person whose death may have been caused by any explosion or accident, of which notice is required by this Act to be given to the inspector of the district, the coroner shall adjourn such inquest unless an inspector, or some person on behalf of a Secretary of State, is present to watch the proceedings:

(2.) The coroner, at least four days before holding the adjourned inquest, shall send to the inspector for the district notice in writing of the time and place of holding the adjourned inquest:

(3.) The coroner, before the adjournment, may take evidence to identify the body, and may order the interment thereof:

(4.) If an explosion or accident has not occasioned the death of more than one person, and the coroner has sent to the inspector of the district notice of the time and place of holding the inquest not less than forty-eight hours before the time of holding the same, it shall not be imperative on him to adjourn such inquest in pursuance of this section, if the majority of the jury think it unnecessary so to adjourn:

(5.) An inspector shall be at liberty at any such inquest to examine any witness, subject nevertheless to the order of the coroner:

(6.) Where evidence is given at an inquest at which an inspector is not present of any neglect as having caused or contributed to the explosion or accident, or of any defect in or about the mine appearing to the coroner or jury to require a remedy, the coroner shall send to the inspector of the district notice in writing of such neglect or default:

(7. Any person having a personal interest in or employed in or in the management of the mine in which the explosion or accident occurred shall not be qualified to serve on the jury empannelled on the inquest; and it shall be the duty of the constable or other officer not to summon any person disqualified under this provision. and it shall be the duty of the coroner not to allow any such person to be sworn or to sit on the jury.

Every person who fails to comply with the provisions of this section shall be guilty of an offence against this Act.

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## PART II.

### RULES.

### *General Rules.*

51. The following general rules shall be observed, so far as is reasonably practicable, in every mine to which this Act applies:

(1.) An adequate amount of ventilation shall be constantly produced in every mine, to dilute and render harmless noxious gases to such an extent that the working places of the shafts, levels, stables, and workings of such mine, and the travelling roads to and from such working places, shall be in a fit state for working and passing therein.

(2.) In every mine in which inflammable gas has been found within the preceding twelve months, then once in every twenty-four hours if one shift of workmen is employed, and once in every twelve hours if two shifts are employed during any twenty-four hours, a competent person or competent persons, who shall be appointed for the purpose, shall, before the time for commencing work in any part of the mine, inspect with a safety lamp that part of the mine, and the roadways leading thereto, and shall make a true report of the condition thereof, so far as ventilation is concerned, and a workman shall not go to work in such part until the same and the roadways leading thereto are stated to be safe. Every such report shall be recorded without delay in a book which shall be kept at the mine for the purpose, and shall be signed by the person making the same.

(3.) In every mine in which inflammable gas has not been found within the preceding twelve months, then once in every twenty-four hours a competent person or competent persons, who shall be appointed for the purpose, shall, so far as is reasonably practicable immediately before time for commencing work in any part of the mine, inspect that part of the mine and the roadways leading thereto, and shall make a true report of the condition thereof so far as ventilation is concerned, and a workman shall not go to work in such part until the same and the roadways leading thereto are stated to be safe. Every report shall be recorded without delay in a book which shall be kept at the mine for the purpose, and shall be signed by the person making the same.

(4.) All entrances to any place not in actual course of working and extension, shall be properly fenced across the whole width of such entrance, so as to prevent persons inadvertently entering the same.

(5.) A station or stations shall be appointed at the entrance to the mine, or to different parts of the mine, as the case may require, and a workman shall not pass beyond any such station until the mine or part of the mine beyond the same has been inspected and stated to be safe.

(6.) If at any time it is found by the person for the time being in charge of the mine or any part thereof that by reason of noxious gases prevailing in such mine or such part thereof, or, of any cause whatever, the mine or the said part is dangerous, every workman shall be withdrawn from the mine or such part thereof as is so found dangerous, and a competent person who shall be appointed for the purpose shall inspect the mine or such part thereof as is so found dangerous, and if the danger arises from inflammable gas shall inspect the same with a locked safety lamp, and in every case shall make a true report of the condition of such mine or part thereof, and a workman shall not, except in so far as is necessary for inquiring into the cause of danger or for the removal thereof, or for exploration, be readmitted into the mine, or such part thereof as was so found dangerous, until the same is stated by such report not to be dangerous. Every such report shall be recorded in a book which shall be kept at the mine for the purpose, and shall be signed by the person making the same.

(7.) In every working approaching any place where there is likely to be an accumulation of explosive gas, no lamp or light other than a locked safety lamp shall be allowed or used, and whenever safety lamps are required by this Act, or by the special rules made in pursuance of this Act to be used, a competent person who shall be appointed for the purpose shall examine every safety lamp immediately before it is taken into the workings for use, and ascertain it to be secure and securely locked, and in any part of a mine in which safety lamps are so required to be used, they shall not be used until they have been so examined and found secure and securely locked, and shall not without due authority be unlocked, and in the said part of a mine a person shall not, unless he is appointed for the purpose, have in his possession any key or contrivance for opening the lock of any such safety lamp, or any lucifer match or apparatus of any kind for striking a light.

(8.) Gunpowder or other explosive or inflammable substance shall only be used in the mine underground as follows:

(*a.*) It shall not be stored in the mine:

(*b.*) It shall not be taken into the mine, except in a case or canister containing not more than four pounds:

(*c.*) A workman shall not have in use at one time in any one place more than one of such cases or canisters:

(*d.*) In charging holes for blasting, an iron or steel pricker shall not be used, and a person shall not have in his possession in the mine underground any iron or steel pricker, and an iron or steel tamping rod or stemmer shall not be used for ramming either the wadding or the first part of the tamping or stemming on the powder:

(*e.*) A charge of powder which has missed fire shall not be unrammed:

(*f.*) It shall not be taken into or be in the possession of any person in any mine, except in cartridges, and shall not be used, except in accordance with the following regulations, during three months after any inflammable gas has been found in any such mine; namely,

(1.) A competent person who shall be appointed for the purpose shall, immediately before firing the shot, examine the place where it is to be used, and the places contiguous thereto, and shall not allow the shot to be fired unless he finds it safe to do so, and a shot shall not be fired except by or under the direction of a competent person who shall be appointed for the purpose:

(2.) If the said inflammable gas issued so freely that it showed a blue cap on the flame of the safety lamp, it shall only be used—

(*a.*) Either in those cases of stone drifts, stone work, and sinking of shafts, in which the ventilation is so managed that the return air from the place where the powder is used passes into the main return air course without passing any place in actual course of working; or

(*b.*) When the persons ordinarily employed in the mine are out of the mine or out of the part of the mine where it is used:

(*g.*) Where a mine is divided into separate panels in such manner that each panel has an independent intake and return air-way from the main air course and the main return air course, the provisions of this rule with respect to gunpowder or other explosive inflammable substance shall apply to each such panel in like manner as if it were a separate mine.

(9.) Where a place is likely to contain a dangerous accumulation of water the working approaching such place shall not exceed eight feet in width, and there shall be constantly kept at a sufficient distance, not being less than five yards, in advance, at least one bore-hole near the center of the working, and sufficient flank bore-holes on each side.

(10.) Every underground plane on which persons travel, which is self-acting or worked by an engine, windlass, or gin, shall be provided (if exceeding thirty yards in length) with some proper means of signalling between the stopping places and the ends of the plane, and shall be provided in every case, at intervals of not more than twenty yards, with sufficient man-holes for places of refuge.

(11.) Every road on which persons travel underground where the load is drawn by a horse or other animal shall be provided, at intervals of not more than fifty yards, with sufficient man-holes, or with a space for a place of refuge, which space shall be of sufficient length, and of at least three feet in width, between the waggons running in the tramroad and the side of such road.

(12.) Every man-hole and space for a place of refuge shall be constantly kept clear, and no person shall place anything in a man-hole or such space so as to prevent access thereto.

(13.) The top of every shaft which for the time being is out of use, or used only as an air shaft, shall be securely fenced.

(14.) The top and all entrances between the top and bottom of every working or pumping shaft shall be properly fenced, but this shall not be taken to forbid the temporary removal of the fence for the purpose of repairs or other operations, if proper precautions are used.

(15.) Where the natural strata are not safe, every working or pumping shaft shall be securely cased, lined, or otherwise made secure.

(16.) The roof and sides of every travelling road and working place shall be made secure, and a person shall not, unless appointed for the purpose of exploring or repairing, travel or work in any such travelling road or working place which is not so made secure.

(17.) Where there is a downcast and furnace shaft, and both such shafts are provided with apparatus in use for raising and lowering persons, every person employed in the mine shall, upon giving reasonable notice, have the option of using the downcast shaft.

(18.) In any mine which is usually entered by means of machinery, a competent person of such age as prescribed by this Act shall be appointed for the purpose of working the machinery which is employed in lowering and raising persons therein, and shall attend for the said purpose during the whole time that any person is below ground in the mine.

(19.) Every working shaft used for the purpose of drawing minerals or for the lowering or raising of persons shall, if exceeding fifty yards in depth, and not exempted in writing by the inspector of the district, be provided with guides and some proper means of communicating distinct and definite signals from the bottom of the shaft and from every entrance for the time being in work between the surface and the bottom of the shaft to the surface, and from the surface to the bottom of the shaft and to every entrance for the time being in work between the surface and the bottom of the shaft.

(20.) A sufficient cover overhead shall be used when lowering or raising persons in every working shaft, except where it is worked by a windlass, or where the person is employed about the pump or some work of repair in the shaft, or where a written exemption is given by the inspector of the district.

(21.) A single linked chain shall not be used for lowering or raising persons in any working shaft or plane except for the short coupling chain attached to the cage or load.

(22.) There shall be on the drum of every machine used for lowering or raising persons such flanges or horns, and also if the drum is conical, such other appliances, as may be sufficient to prevent the rope from slipping.

(23.) There shall be attached to every machine worked by steam, water, or mechanical power and used for lowering or raising persons, an adequate break, and also a proper indicator (in addition to any mark on the rope) which shows to the person who works the machine the position of the cage or load in the shaft.

(24.) Every fly-wheel and all exposed and dangerous parts of the machinery used in or about the mine shall be and be kept securely fenced.

(25.) Every steam boiler shall be provided with a proper steam gauge and water gauge, to show respectively the pressure of steam and the height of water in the boiler, and with a proper safety valve.

(26.) After dangerous gas has been found in any mine, a barometer and thermometer shall be placed above ground in a conspicuous position near the entrance to the mine.

(27.) No person shall wilfully damage, or without proper authority remove or render useless any fence, fencing, casing, lining, guide, means of signalling, signal, cover, chain, flange, horn, break, indicator, steam gauge, water gauge, safety valve, or other appliance or thing provided in any mine in compliance with this Act.

(28.) Every person shall observe such directions with respect to working as may be given to him with a view to comply with this Act or the special rules.

(29.) A competent person or competent persons who shall be appointed for the purpose shall, once at least in every twenty-four hours, examine the state of the external parts of the machinery, and the state of the head gear, working places, levels, planes, ropes, chains, and other works of the mine which are in actual use, and once at least in every week shall examine the state of the shafts by which persons ascend or descend, and the guides or conductors therein, and shall make a true report of the result of such examination, and such report shall be recorded in a book to be kept at the mine for the purpose, and shall be signed by the person who made the same.

(30.) The persons employed in a mine may from time to time appoint two of their number to inspect the mine at their own cost, and the persons so appointed shall be allowed, once at least in every month, accompanied, if the owner, agent, or manager of the mine thinks fit, by himself or one or more officers of the mine, to go to every part of the mine, and to inspect the shafts, levels, planes, working places, return air-ways, ventilating apparatus, old workings, and machinery, and shall be afforded by the owner, agent, and manager, and all persons in the mine, every facility for the purpose of such inspection, and shall make a true report of the result of such inspection, and such report shall be recorded in a book to be kept at the mine for the purpose, and shall be signed by the persons who made the same.

(31.) The books mentioned in this section, or a copy thereof, shall be kept at the office at the mine, and any inspector under this Act, and any person employed in the mine, may, at all reasonable times, inspect and take copies of and extracts from any such books.

Every person who contravenes or does not comply with any of the general rules in this section shall be guilty of an offence against this Act; and in the event of any contravention of or non-compliance with any of the said general rules in the case of any mine to which this Act applies, by any person whomsoever, being proved, the owner, agent, and manager shall each be guilty of an offence against this Act, unless he proves that he had taken all reasonable means, by publishing and to the best of his power enforcing the said rules as regulations for the working of the mine, to prevent such contravention or non-compliance.

### *Special Rules.*

52. There shall be established in every mine to which this Act applies such rules (referred to in this Act as special rules) for the conduct and guidance of the persons acting in the management of such mine or employed in or about the same as, under the particular state and circumstances of such mine, may appear best calculated to prevent dangerous accidents, and to provide for the safety and proper discipline of the persons employed in or about the mine, and such special rules, when established, shall be signed by the inspector who is inspector of the district at the time such rules are established, and shall be observed in and about every such mine, in the same manner as if they were enacted in this Act.

If any person who is bound to observe the special rules established for any mine, acts in contravention of or fails to comply with any of such special rules, he shall be guilty of an offence against this Act, and also the owner, agent, and manager of such mine, unless he proves that he had taken all reasonable means, by publishing and to the best of his power enforcing the said rules as regulations for the working of the mine so as to prevent such contravention or non-compliance, shall each be guilty of an offence against this Act.

53. The owner, agent, or manager of every mine to which this Act applies shall frame and transmit to the inspector of the district, for approval by a Secretary of State, special rules for such mine within three months after the commencement of this Act, or within three months after the commencement (if subsequent to the commencement of this Act) of any working for the purpose of opening a new mine or of renewing the working of an old mine.

The proposed special rules, together with a printed notice specifying that any objection to such rules on the ground of anything contained therein or omitted therefrom may be sent by any of the persons employed in the mine to the inspector of the district, at his address, stated in such notice, shall, during not less than two weeks before such rules are transmitted to the inspector, be posted up in like manner as is provided in this Act respecting the publication of special rules for the information of persons employed in the mine, and a certificate that such rules and notice have been so posted up shall be sent to the inspector with the rules, signed by the person sending the same.

If the rules are not objected to by the Secretary of State within forty days after their receipt by the inspector, they shall be established.

54. If the Secretary of State is of opinion that the proposed special rules so transmitted, or any of them, do not sufficiently provide for the prevention of dangerous accidents in the mine, or for the safety of the persons employed in or about the mine, or are unreasonable, he may, within forty days after the rules are received by the inspector, object to the rules, and propose to the owner, agent, or manager in writing any modifications in the rules by way either of omission, alteration, substitution, or addition.

If the owner, agent, or manager does not, within twenty days after the modifications proposed by the Secretary of State are received by him, object in writing to them, the proposed special rules, with such modifications, shall be established.

If the owner, agent, or manager sends his objection in writing within the said twenty days to the Secretary of State, the matter shall be referred to arbitration, and the date of the receipt of such objection by the Secretary of State shall be deemed to be the date of the reference, and the rules shall be established as settled by an award on arbitration.

55. After special rules are established under this Act in any mine, the owner, agent, or manager of such mine may from time to time propose in writing to the inspector of the district, for the approval of a Secretary of State, any amendment of such rules or any new special rules, and the provisions of this Act with respect to the original special rules shall apply to all such amendments and new rules in like manner, as near as may be, as they apply to the original rules.

A Secretary of State may from time to time propose in writing to the owner, agent, or manager of the mine any new special rules, or any amendment to the special rules, and the provisions of this Act with respect to a proposal of a Secretary of State for modifying the special rules transmitted by the owner, agent, or manager of a mine shall apply to all such new special rules and amendments in like manner, as near as may be, as they apply to such proposal.

56. If the owner, agent, or manager of any mine to which this Act applies makes any false statement with respect to the posting up of the rules and notices, he shall be guilty of an offence against this Act, and if special rules for any mine are not transmitted within the time limited by this Act to the inspector for the approval of a Secretary of State, the owner, agent,

and manager of such mine shall each be guilty of an offence against this Act, unless he prove that he had taken all reasonable means, by enforcing to the best of his power the provisions of this section, to secure the transmission of such rules.

57. For the purpose of making known the special rules and the provisions of this Act to all persons employed in and about each mine to which this Act applies, an abstract of the Act supplied, on the application of the owner, agent, or manager of the mine, by the inspector of the district on behalf of a Secretary of State, and an entire copy of the special rules shall be published as follows:

(1.) The owner, agent, or manager of such mine shall cause such abstract and rules, with the name and address of the inspector of the district, and the name of the owner or agent and of the manager appended thereto, to be posted up in legible characters, in some conspicuous place at or near the mine, where they may be conveniently read by the persons employed; and so often as the same becomes defaced, obliterated, or destroyed, shall cause them to be renewed with all reasonable dispatch:

(2.) The owner, agent, or manager shall supply a printed copy of the abstract and the special rules gratis to each person employed in or about the mine who applies for such copy at the office at which the persons immediately employed by such owner, agent, or manager are paid:

(3.) Every copy of the special rules shall be kept distinct from any rules which depend only on the contract between the employer and employed.

In the event of any non-compliance with the provisions of this section by any person whomsoever, the owner, agent, and manager shall each be guilty of an offence against this Act; but the owner, agent, or manager of such mine shall not be deemed guilty if he prove that he had taken all reasonable means, by enforcing to the best of his power the observance of this section, to prevent such non-compliance.

58. Every person who pulls down, injures, or defaces any proposed special rules, notice, abstract, or special rules when posted up in pursuance of the provisions of this Act with respect to special rules, or any notice posted up in pursuance of the special rules, shall be guilty of an offence against this Act.

59. An inspector under this Act shall, when required, certify a copy which is shown to his satisfaction to be a true copy of any special rules, which for the time being are established under this Act in any mine, and a copy so certified shall be evidence (but not to the exclusion of other proof) of such special rules and of the fact that they are duly established under this Act and have been signed by the inspector.

## PART III.

## SUPPLEMENTAL.

### *Penalties.*

60. Every person employed in or about a mine, other than an owner, agent, or manager, who is guilty of any act or omission which in the case of an owner, agent, or manager would be an offence against this Act, shall be deemed to be guilty of an offence against this Act.

Every person who is guilty of an offence against this Act shall be liable to a penalty not exceeding, if he is an owner, agent, or manager, twenty pounds, and if he is any other person, two pounds, for each offence; and if the inspector has given written notice of any such offence, to a further penalty not exceeding one pound for every day after such notice that such offence continues to be committed.

61. Where a person who is an owner, agent, or manager of or a person employed in or about a mine is guilty of any offence against this Act which, in the opinion of the court that tries the case, is one which was reasonably calculated to endanger the safety of the persons employed in or about the mine, or to cause serious personal injury to any of such persons, or to cause a dangerous accident, and was committed wilfully by the personal act, personal default, or personal negligence of the person accused, such person shall be liable, if the court is of opinion that a pecuniary penalty will not meet the circumstances of the case, to imprisonment, with or without hard labour, for a period not exceeding three months.

If any person feel aggrieved by any conviction made by a court of summary jurisdiction on determining any information under this Act, by which conviction imprisonment is adjudged in pursuance of this section, or by which conviction the sum adjudged to be paid amounts to or exceeds half the maximum penalty, the person so aggrieved may appeal therefrom, subject to the conditions and regulations following:

(1.) The appeal shall be made to the next court of general or quarter sessions for the county, division, or place in which the cause of appeal has arisen, holden not less than twenty-one days after the decision of the court from which the appeal is made:

(2.) The appellant shall, within seven days after the cause of appeal has arisen, give notice to the other party and to the court of summary jurisdiction of his intention to appeal, and of the ground thereof:

(3.) The appellant shall, immediately after such notice, enter into a recognizance before a justice of the peace, with two sufficient sureties, conditioned personally to try such appeal, and to abide the judgment of the court thereon, and to pay such costs as may be awarded by the court, or give such other security by deposit of money or otherwise as the justice may allow:

(4.) The justice may, if he think fit, on the appellant entering into such recognizance or giving such other security as aforesaid, release him from custody:

(5.) The court of appeal may adjourn the appeal, and upon the hearing thereof they may confirm, reverse, or modify the decision of the court of summary jurisdiction, or remit the matter to the court of summary jurisdiction with the opinion of the court of appeal thereon, or make such other order in the matter as the court thinks just. The court of appeal may also make such order as to costs to be paid by either party as the court thinks just.

Provided that in Scotland—

(1.) This section shall not apply to any conviction made by a sheriff:

(2.) The term "entering into a recognizance before a justice of the peace" shall mean finding caution with the clerk of the justices of the peace to the satisfaction of a justice of the peace, and the term "recognizance" shall mean a bond of caution:

(3.) In Scotland it shall be competent to any person empowered to appeal by this section, to appeal against a conviction by a sheriff to the next circuit court, or where there are no circuit courts to the high court of justiciary at Edinburgh, in the manner prescribed by such of the provisions of the Act of the twentieth year of the reign of King George the Second, chapter forty-three, and any Acts amending the same, as relate to appeals in matters criminal, and by and under the rules, limitations, conditions, and restrictions contained in the said provisions.

62. All offences under this Act not declared to be misdemeanours, and all penalties under this Act, and all money and costs by this Act directed to be recovered as penalties, may be prosecuted and recovered in manner directed by the Summary Jurisdiction Acts before a court of summary jurisdiction.

Proceedings for the removal of a check weigher shall be deemed to be a matter on which a court of summary jurisdiction has authority by law to make an order in pursuance of the Summary Jurisdiction Acts, and summary orders under this Act may be made on complaint before a court of summary jurisdiction in manner provided by the Summary Jurisdiction Acts.

The "Court of Summary Jurisdiction," when hearing and determining an information or complaint, shall be constituted—

(*a*.) In England, either of two or more justices of the peace in petty sessions sitting at a place appointed for holding petty sessions, or of some magistrate or officer for the time being empowered by law to do alone any act authorised to be done by more than one justice of the peace and sitting alone or with others at some court or other place appointed for the administration of justice; or,

(*b*.) In Scotland, of two or more justices of the peace sitting as judges in a justice of the peace court, or of the sheriff or some other magistrate or officer for the time being empowered by law to do alone any act authorised to be done by more than one justice of the peace, and sitting alone or with others at some court or other place appointed for the administration of justice; or,

(c.) In Ireland, within the police district of Dublin metropolis, of one of the divisional justices of that district sitting at a police court within the district, and elsewhere of two or more justices of the peace sitting in petty sessions at a place appointed for holding petty sessions.

63. In every part of the United Kingdom the following provisions shall have effect:

1. Any complaint or information made or laid in pursuance of this Act shall be made or laid within three months from the time when the matter of such complaint or information respectively arose:
2. The description of any offence under this Act in the words of this Act shall be sufficient in law:
3. Any exception, exemption, proviso, excuse, or qualification, whether it does or not accompany the description of the offence in this Act, may be proved by the defendant, but need not be specified or negatived in the information, and if so specified or negatived, no proof in relation to the matters so specified or negatived shall be required on the part of the informant:
4. The owner, agent, or manager may, if he think fit, be sworn and examined as an ordinary witness in the case where he is charged in respect of any contravention or non-compliance by another person:
5. The court shall, if required by either party, cause minutes of the evidence to be taken and preserved:
6. A court of summary jurisdiction shall not impose a penalty under this Act exceeding fifty pounds, but any such court may impose that or any less penalty for any one offence, notwithstanding the offence involves a penalty of higher amount.

64. No prosecution shall be instituted against the owner, agent, or manager of a mine to which this Act applies for any offence under this Act which can be prosecuted before a court of summary jurisdiction, except by an inspector or with the consent in writing of a Secretary of State; and in the case of any offence of which the owner, agent, or manager of a mine is not guilty if he proves that he had taken all reasonable means to prevent the commission thereof, an inspector shall not institute any prosecution against such owner, agent, or manager, if satisfied that he had taken such reasonable means as aforesaid.

65. In Scotland the following provisions shall have effect:

(1.) All jurisdictions, powers, and authorities necessary for the court of summary jurisdiction under this Act are hereby conferred on that court:

(2.) Every person found liable under this Act by a court of summary jurisdiction in any penalty, or to pay any money or costs by this Act directed to be recovered as penalties, shall be liable in default of immediate payment to be imprisoned for a term not exceeding three months, and the conviction and warrant may be in the form of No. 3 of Schedule K. of the Summary Procedure Act, 1864:

(3.) In Scotland any penalty exceeding fifty pounds shall be recovered and enforced in the same manner in which any penalty due to Her Majesty under any Act of Parliament may be recovered and enforced.

66. Nothing in this Act shall prevent any person from being indicted or liable under any other Act or otherwise to any other or higher penalty or punishment than is provided for any offence by this Act, so that no person be punished twice for the same offence.

If the court before whom a person is charged with an offence under this Act think that proceedings ought to be taken against such person for such offence under any other Act or otherwise, the court may adjourn the case to enable such proceedings to be taken.

67. A person who is the owner, agent, or manager of any mine to which this Act applies, or the father, son, or brother of such owner, agent, or manager, shall not act as a court or member of a court of summary jurisdiction in respect to any offence under this Act.

68. When a penalty is imposed under this Act for neglecting to send a notice of any explosion or accident or for any offence against this Act which has occasioned loss of life or personal injury, a Secretary of State may (if he think fit) direct such penalty to be paid to or distributed among the persons injured, and the relatives of any persons whose death may have been occasioned by such explosion, accident, or offence, or among some of them.

Provided that—

(1.) Such persons did not in his opinion occasion or contribute to occasion the explosion or accident, and did not commit and were not parties to committing the offence:

(2.) The fact of such payment or distribution shall not in any way affect or be receivable as evidence in any legal proceeding relative to or consequential on such explosion, accident, or offence.

Save as aforesaid, all penalties imposed in pursuance of this Act shall be paid into the receipt of Her Majesty's Exchequer, and shall be carried to the Consolidated Fund.

In Ireland all penalties imposed and recovered under this Act shall be applied in manner directed by the Fines Act (Ireland), 1851, and any act amending the same.

69. The owner, occupier, or manager of every mine shall on the first of January every year, and at any other time when required by the Secretary of State, send to the inspector of his district a return of facts relating to his mine in the form given in Schedule Four.

### *Miscellaneous.*

70. If any question arises whether a mine is a mine to which this Act or the Metalliferous Mines Regulation Act, 1872, applies, such question shall be referred to a Secretary of State, whose decision thereon shall be final.

71. All notices under this Act shall be in writing or print, or partly in writing and partly in print, and all notices and documents required by this Act to be served or sent by or to an inspector may be either delivered personally, or served and sent by post by a prepaid letter, and, if served or sent by post, shall be deemed to have been served and received respectively at the time when the letter containing the same would be delivered in the ordinary course of post, and in proving such service or sending it shall be sufficient to prove that the letter containing the notice was properly addressed and put into the post.

72. In this Act, unless the context otherwise requires,—

The term "mine" includes every shaft in the course of being sunk, and every level and inclined plane in the course of being driven for commencing or opening any mine, or for searching for or proving minerals, and all the shafts, levels, planes, works, machinery, tramways, and sidings, both below ground and above ground, in and adjacent to a mine and any such shaft, level, and inclined plane, and belonging to the mine:

The term "shaft" includes pit:

The term "plan" includes a map and section, and a correct copy or tracing of any original plan as so defined:

The term "owner," when used in relation to any mine, means any person or body corporate who is the immediate proprietor, or lessee, or occupier of any mine, or of any part thereof, and does not include a person or body corporate who merely receives a royalty, rent, or fine from a mine, or is merely the proprietor of a mine subject to any lease, grant, or license for the working thereof, or is merely the owner of the soil, and not interested in the minerals of the mine; but any contractor for the working of any mine or any part thereof shall be subject to this Act in like manner as if he were an owner, but so as not to exempt the owner from any liability:

The term "agent," when used in relation to any mine, means any person having, on behalf of the owner, care or direction of any mine, or of any part thereof, and superior to a manager appointed in pursuance of this Act:

The term "Secretary of State" means one of Her Majesty's Principal Secretaries of State:

The term "child" means a child under the age of thirteen years:

The term "young person" means a person of the age of thirteen years and under the age of sixteen years:

The term "woman" means a female of the age of sixteen years and upwards:

The term "Summary Jurisdiction Acts" means, as follows:

As to England, the Act of the session of the eleventh and twelfth years of the reign of Her present Majesty, chapter forty-three, intituled "An Act to facilitate the performance of the duties of justices of the peace out of sessions within England and Wales with "respect to summary convictions and orders," and any Acts amending the same:

As to Scotland, "The Summary Procedure Act, 1864:"

As to Ireland, within the police district of Dublin metropolis, the Acts regulating the powers and duties of justices of the peace for such district, or of the police of such district, and elsewhere, "The Petty Session (Ireland) Act, 1851," and an Act amending the same:

The term "Court of Summary Jurisdiction" means—

In England and Ireland, any justice or justices of the peace, metropolitan police magistrate, stipendiary or other magistrate, or officer, by whatever name called, to whom jurisdiction is given by the Summary Jurisdiction Acts or any Acts therein referred to:

In Scotland, any justice or justices of the peace, sheriff, or other magistrate, to the proceedings before whom for the trial or prosecution of any offence, or for the recovery of any penalty under any Act of Parliament, the provisions of the Summary Jurisdiction Acts may be applied.

73. In the application of this Act to Scotland—

(1.) The term "Attorney General" means the Lord Advocate:

(2.) The term "injunction" means interdict:

(3.) The term "misdemeanour" means "crime and offence:"

(4.) The term "chairman of quarter sessions" means the sheriff of the county:

(5.) The term "sheriff" includes sheriff substitute:

(6.) The term "attending on subpœna before a court of record" means attending on citation the Court of Justiciary:

(7.) The Queen's and Lord Treasurer's Remembrancer shall perform the duties of a master of one of the superior courts under this Act:

(8.) The term "stipendiary magistrate" means a sheriff or sheriff substitute:

(9.) Notices of explosions, accidents, loss of life, or personal injury shall be deemed to be sent to the inspector of the district on behalf of the Lord Advocate:

(10.) Section sixteen of "The Public Health (Scotland) Act, 1867," shall be substituted for "section eight of the Nuisances Removal Act "for England, 1855, as amended and extended by the Sanitary "Act, 1866."

74. The persons who at the commencement of this Act are acting as inspectors under the Acts hereby repealed shall continue to act in the same manner as if they had been appointed under this Act.

75. The special rules which at the commencement of this Act are in force

under any Act hereby repealed in any mine to which this Act applies shall continue to be the special rules in such mine until special rules are established under this Act for such mine, and while they so continue shall be of the same force as if they were established under this Act.

76. The Acts described in Schedule Three to this Act are hereby repealed to the extent in the third column of that Schedule mentioned.

Provided that this repeal shall not affect anything done or suffered before the commencement of this Act, and all offences committed and penalties incurred before the commencement of this Act may be punished and recovered in the same manner as if this Act had not passed.

## SCHEDULES.

### Schedule One.

*Table of maximum Fees to be paid in respect of Certificates of Managers of Mines.*

| | |
|---|---|
| By an applicant for examination, . . . . . . . | Two pounds. |
| By applicant for certificate of service for registration, . | Five shillings. |
| For copy of certificate, . . . . . . . . . . . . . . . . . . | Five shillings. |

### Schedule Two.

*Proceedings of Board for Examinations.*

1. The board shall meet for the dispatch of business, and shall from time to time make such regulations with respect to the summoning, notice, place, management, and adjournment of such meetings, and generally with respect to the transaction and management of business, including the quorum at meetings of the board, as they think fit, subject to the following conditions:

(a.) The first meeting shall be summoned by the inspector of the district, and shall be held on such day as may be fixed by a Secretary of State;

(b.) An extraordinary meeting may be held at any time on the written requisition of three members of the board addressed to the chairman;

(c.) The quorum to be fixed by the board shall consist of not less than three members;

(d.) Every question shall be decided by a majority of votes of the members present and voting on that question;

(e.) The names of the members present, as well as those voting upon each question, shall be recorded;

(f.) No business shall be transacted unless notice in writing of such business has been sent to every member of the board seven days at least before the meeting.

2. The board shall from time to time appoint some person to be chairman, and one other person to be vice-chairman.

3. If at any meeting the chairman is not present at the time appointed for holding the same, the vice-chairman shall be the chairman of the meeting, and if neither the chairman nor vice-chairman shall be present, then the members present shall choose some one of their number to be chairman of such meeting.

4. In case of an equality of votes at any meeting, the chairman for the time being of such meeting shall have a second or casting vote.

5. The appointment of an examiner may be made by a minute of the board signed by the chairman.

6. The board shall keep minutes of their proceedings, which may be inspected or copied by a Secretary of State, or any person authorized by him to inspect or copy the same.

## SCHEDULE THREE.

| Date of Act. | Title of Act. | Extent of Repeal. |
|---|---|---|
| 5 & 6 Vict. c. 99, . . . . | An Act to prohibit the employment of women and girls in mines and collieries, to regulate the employment of boys, and to make other provisions relating to persons working therein. | The whole Act so far as it relates to mines to which this Act applies. |
| 23 & 24 Vict. c. 151, . . | An Act for the regulation and inspection of mines. | Sections one to five, both inclusive, so far as they relate to mines to which this Act applies, and the residue of the Act entirely. |
| 25 & 26 Vict. c. 79, . . . | An Act to amend the law relating to coal mines, | The whole Act. |

## Schedule Four.

**Mines Regulation and Inspection.**

*Annual Return from Owner or Agent.*

Name of Colliery . . . . . . . . . . . . . .

Name of Pit . . . . . . . . . . . Name of Seam . . . . . . . . . . . .

Year ending the . . . . . . . . . . day of . . . . . . . . 187 .

| Average Number of Persons employed daily. | | Mode of Ventilation. | Furnace or Fan, with Description. | Diameter and Depth of downcast and upcast Shafts. | | | | Number of Splits and Quantity. | | Average Length of Airways. | Sectional Area of Airways. | Average Total Quantity of fresh Air in cubic feet per minute. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Downcast. | | Upcast. | | | | | | |
| Above Ground. | Under Ground. | | | Dia-meter in feet. | Depth in feet. | Dia-meter in feet. | Depth in feet. | Splits. | Quantity in cubic feet per minute. | | | |
| | | | | | | | | | | | | |

# REPORTS
OF THE
# MINE INSPECTORS
OF THE
# BITUMINOUS COAL FIELDS.

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## BITUMINOUS COAL DISTRICTS.

The following are the counties, or parts thereof, composing the respective mining districts of the bituminous coal fields of the State, arranged in accordance with law by the board of examiners, with the name and post-office address of the several mine inspectors.

### FIRST DISTRICT.

THAT PART OF ALLEGHENY COUNTY LYING SOUTH OF THE OHIO AND MONONGAHELA RIVERS, TOGETHER WITH THE COUNTIES OF BEDFORD, FAYETTE, GREENE, SOMERSET, AND WASHINGTON.

**JAMES LOUTTIT, Inspector,**
Monongahela City, Washington county.

### SECOND DISTRICT.

THAT PORTION OF ALLEGHENY COUNTY LYING NORTH OF THE OHIO AND MONONGAHELA RIVERS, AND THE COUNTIES OF ARMSTRONG, BEAVER, BUTLER, INDIANA, AND WESTMORELAND.

**JOHN J. DAVIS, Inspector,**
Pittsburgh, Allegheny county.

### THIRD DISTRICT.

THE COUNTIES OF CAMERON, CLARION, CLEARFIELD, CRAWFORD, ELK, ERIE, FOREST, JEFFERSON, LAWRENCE, MCKEAN, MERCER, VENANGO, AND WARREN.

**THOMAS K. ADAMS,**
Wheeler P. O., Mercer county.

### FOURTH DISTRICT.

THE COUNTIES OF BLAIR, BRADFORD, CAMBRIA, CENTRE, CLINTON, HUNTINGDON, LYCOMING, POTTER, SULLIVAN, AND TIOGA.

**ROGER HAMPSON, Inspector,**
Towanda, Bradford county.

# LETTER OF TRANSMITTAL.

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## FIRST DISTRICT.

To the Honorable AARON K. DUNKEL, *Secretary of Internal Affairs of the Commonwealth of Pennsylvania:*

SIR: I have the honor herewith to submit my annual report as inspector of mines for the first bituminous coal district of Pennsylvania, for the year ended December 31, 1882, which is properly the sixth annual report for this district since the enactment of the ventilation law. My commission is dated the 20th of March last, but I could not enter upon the duties of the office until after the 15th of April following, which was the time fixed for the resignation of my worthy and able predecessor, William Wilcox, to take effect. This left me but eight months of the last year, which I have found to be too short a time for visiting all of the mines in this district, and at the same time give proper attention to the other necessary duties of the office, which is one reason for much of the incompleteness of this report.

This report contains a copy of the circular letter sent by me to each of the operators in the district, previous to my visiting any of the mines; a copy of the annual circular sent to each of the operators at the end of the year; a copy of the rules adopted by the Cambria Iron Company for the regulation of operations at each of their several coal mines; a copy of rules for local miners' relief societies, adopted at the *Catsburg* and *Enterprise* mines; a short description of each of the mines visited; a list of the mining casualties; the actual aggregate production of one hundred and twenty-one mines for the year; the estimated aggregate production for the whole district, based upon the mines reported, and a comparison of the number of persons killed to the estimated amount of coal mined.

This has been a very active season for the coal and coke trade throughout a large part of the district, as may be observed from the greatly increased production over that of the previous year, for the same number of mines. And while the total production has increased, it will also be noticed by the tables that the number of casualties are steadily becoming less. However, the number of fatal accidents are more this year than last. This increase in fatal accidents is not attributable to the operation of mining strictly, since the number of deaths from falls of the over-clay or slate is just the same as last year. The number of deaths from wagons has increased from two to four, and the number of deaths and injuries from explosions of gas has increased from three to sixteen. A large majority of the fatal accidents is found to be caused by the falling of the over-clay or slate in the rooms or working-places of the mines, and are usually found to result from lack of proper care on the part of the miner. Mining is in some degree a dangerous occupation, but not more so, under proper care and caution, than many other vocations.

The use of machinery is gradually taking the place of mule power for hauling the coal from the interior of the mines, and this will also tend to reduce the number of accidents to life.

A few of the operators are still slow in providing proper and sufficient ventilation facilities, but the general condition of the mines in the whole district is being steadily improved, and the wisdom of the requirements of the ventilation act is becoming more apparent every day to all classes of persons connected with our great coal industry.

Very respectfully yours,
JAMES LOUTTIT,
*Inspector.*

MONONGAHELA CITY, PA., *February 14, 1883.*

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On April 6, I sent the following circular to the operators of the district:

OFFICE OF INSPECTOR OF BITUMINOUS COAL MINES,
FIRST DISTRCT OF PENNSYLVANIA,
MONONGAHELA CITY, *April 6, 1882.*

*To the mine owners and mine operators of the Bituminous Coal District:*

GENTLEMEN: Having received the appointment to fill the vacancy caused by the resignation of William Wilcox, Esq., for the unexpired term of four years, commencing May 15, 1881, I desire to call your attention to the fact. The district is composed of the counties of Washington, Greene, Fayette, Somerset, Bedford, and all that portion of Allegheny lying west and south of the Monongahela and Youghiogheny rivers. Having commenced my duties of visiting and inspecting the mines in this district, I shall visit your mine at an early day, and I hope to find everything connected with the mine in satisfactory condition.

Respectfully yours,
JAMES LOUTTIT,
*Bituminous Mine Inspector, First District.*

On January 1, I sent the following blank to all the operators in this district:

ANNUAL REPORT

*Of . . . . . mine, located at . . . . . . . , county of . . . . . . . .*
*Operated by . . . . . . , to James Louttit, Bituminous Mine Inspector for First District of Pennsylvania, for the year ending December 31, 1882.*

Name of superintendent.
Post-office address.

Name of mine-boss.
Post-office address.
Number of mines owned by your company in this district.
Number of mines operated during the year.
Average number of persons employed inside.
Average number of persons employed outside.
Average number of mules and horses employed.
Average price paid for mining per ton or bushel.
Number of days worked during the year.
Total number of tons mined (of 2,000 pounds each) during the year.
Number of steam pumps used for drainage.
Number of stationary engines used for hauling and hoisting coal.
Number of locomotives used in mines.
Number of boilers used.
Number of coke ovens operated by your company during the year.
Number of coke ovens built during the year.
Improvements made by you during the year.

I enclose you this blank report for the purpose of obtaining the necessary information to give a full report of the production of this district, the number of persons employed, &c. This information furnished by you will be *kept strictly confidential*, and will not be published, only in the aggregate production of the district, (except at your request.) I shall be much obliged if you fill this blank and return it to this office as soon as practicable.

Yours very respectfully,

JAMES LOUTTIT,
*Inspector.*

The following table contains in aggregate the replies to the last-mentioned circular :

### TABLE

*Showing coal production, &c., in the First Bituminous Coal District of Pennsylvania, for 1882 :*

| | |
|---|---|
| Actual amount of coal produced from one hundred and twenty-one mines, as reported in tons, | 6,554,080 |
| Estimated production of the whole district, or one hundred and eighty-nine mines, in tons, based upon the actual production, | 10,237,458 |
| Estimated number of persons employed in the mines, | 13,029 |
| Estimated number of persons employed outside, | 2,646 |
| Estimated total number employed about the mines, | 15,675 |
| Total number of casualties about the mines, | 57 |
| Number of lives lost in and about the mines, | 31 |
| Number of non-fatal casualties, | 26 |
| Number of deaths from falls of roof and slate, | 20 |

| | |
|---|---|
| Number of deaths from wagons, . . . . . . . . . . . . . . | 4 |
| Number of deaths from explosions of gas, . . . . . . . | 7 |
| Number of non-fatal injuries from explosions of gas, . . . . . | 9 |
| Number of widows caused by the above-mentioned deaths, . . | 18 |
| Number of orphans caused by the above-mentioned deaths, . | 40 |
| Amount of coal produced per life lost, in tons, . . . . . . . . | 330,240 |
| Number of persons employed per life lost, . . . . . . . | 505 |
| Number of persons employed per each casualty, . . . . . . . | 273 |
| Amount of coal produced per each non-fatal accident, . . . . | 393,748 |

## MINES ON THE MONONGAHELA RIVER.

### Knob Mines

Are located about one mile above West Brownsville. The coal here lies below water level, and is reached by a slope. It is owned and operated by the Knob Coal Company. They have a furnace and ventilating shaft, about sixty feet deep. I found these mines in good condition, as to ventilation and drainage. The air-current measured thirteen thousand cubic feet per minute at the inlet, and fourteen thousand five hundred cubic feet per minute at the outlet.

### Neel's Mine

Is situated on the west side of the river, at the lower end of the town of Greenfield. It is owned and operated by Jordon S. Neel. The coal is nearly all mined out here. This is a drift mine.

### Globe Mines

Include the original *Globe* and *Dexter* mines. They are owned and operated by Crowthers, Musgrove & Co. At my first visit, the ventilation was quite imperfect, because of the furnace stack having been blown down, but at my last visit I found that it had been put in proper position again, and the air-current was quite satisfactory.

### Eclipse Mine

Is also situated on the west side of the river. It is a *drift* mine, and operated by Jordon S. Neel. This mine is in very good working condition. The furnace produces ample ventilation in all parts of the mine.

### Caledonia Mine

Is operated by T. J. Wood & Co., and owned by William Thompson. This is also a *drift* mine. It is in good working order. A new tipple has been recently built, and new outside tracks laid. The main entry has been retimbered, graded, and track relaid. A new air-shaft has been sunk, and a ventilating furnace built at the bottom, which, with proper management, will produce ample ventilation for some time to come.

### Champion Mine

Is owned by William Thompson, and operated under lease by Morgan, Dixon & Co. It is a drift mine, and ventilated by furnace power. It was in fair condition at the time of my visit.

### American Mine

Is owned and operated by F. H. Coursin. The ventilation and drainage was found to be in good condition. The air-current measured seven thousand cubic feet at the inlet per minute, and eight thousand cubic feet at the outlet. Fifty men are employed. It is a drift mine, and ventilation is produced by furnace power. Benjamin Feredy is the mine boss.

### Clipper Mine

Is situated on the west side of the river, and worked by a drift opening. It is owed and operated by the Clipper Coal Company. This mine was not working at the time of my visit, owing to a land slide interfering with the check-house, which caused them to make another opening further up the river. The interior is well laid out, and in good working condition.

### Tremont Mine

Is situated on the east side of the river. It is a drift mine, and has been operated but little during the year.

### Little Redstone Mine

Is operated by James Rutherford. It is a small drift mine, with no special appliance for producing ventilation, and the air-current is not satisfactory.

### Carondelet Mine

Is a drift opening, and owned and operated by Frazer & Frye. It is in good working condition, but the coal is nearly all worked out. They are opening up another tract of coal in the same vicinity, with fair indications at present of giving good satisfaction.

### Bargeddies Mine

Is situated on the east side of the river, and operated by James Harris & Co. It is in fair working condition, except the front part, which was formerly worked out, without a due regard for the future working of the rear coal. There are no special appliances here for ventilation purposes.

### Snow Hill Mine

Is a drift opening, and a new mine. Indications so far are favorable for an excellent mine at this place. Joseph Underwood is superintendent.

### Umpire Mine

Is operated by Snowden, Graham & Co. It is one of the oldest mines in Pool No. 4. The entries extend from the front through the hill to Big Redstone creek. Coke is being manufactured here out of the dust coal. Ventilation is produced by furnace power.

### Stockdale Mine

Is situated on the west side of the river, and is a drift opening. It is owned and operated by Tomer & McKinley This mine is well ventilated, but the drainage is not good, owing to a deep swamp crossing the entries at some distance from the pit mouth. The coal is hauled from the interior of the mine to the pit mouth, and from thence it is let down on an incline tramway to the river, by wire rope. Charles Cocaine is mine boss.

### Abe Hayes Mine

Is a drift opening, and owned and operated by S. B. Hayes, with Thomas S. Hutchinson as superintendent. This mine is in good running order. Ventilation is produced by a large furnace, which gives good satisfaction. The drainage is well provided for. Robert McMasters inside boss.

### Black Diamond Mine

Is owned by the heirs of William H. Brown, deceased, and operated, under lease, by the Harlem Coal Company. It is a drift mine, and worked on the double-entry system. It is well ventilated by furnace power, and the drainage is good. Henry Louttit is mine boss.

### Jones Mine

Is located on the west side of the river, in the First ward of Monongahela City, and is a drift mine. It was formerly known as the *Warne* mine, being owned by Joseph Warne, and operated by the Warne Brothers, but was recently purchased by James Jones, who is the present operator. It is a drift opening, and the coal is transported from the interior of the mine to the tipple at the river, by means of an engine and wire rope. A new tipple has recently been constructed to run coal by rail. The ventilation is not good, and the drainage is poor, by reason of swamps crossing the entries. Bernard Callahan is mine boss.

### Catsburg Mines

Are owned by Louis Staib and Anderson & Dravo. These two mines are at present worked in connection, as one mine, the coal from both being handled over the same road and tipple. A new trestle-work has recently been constructed from near the pit mouth to the tipple house; a brick engine-house built; engine, drums, wire rope, and all the necessary machinery has been put in position for conveying the coal from the interior of the mine to the river. It is proposed to construct a new furnace at an early day. This mine is in excellent condition for extensive operations. Adam Keil is superintendent, and Peter Doney mine boss.

### New Eagle Mine

Is located near the lower end of Monongahela City, and owned by Hon. James H. Hopkins, of Pittsburgh. Thomas H. Hutchinson is superintendent in charge. The coal is run from the pit mouth to the river, by means of a stationary engine and wire rope. The ventilation is fair, but the drainage is very deficient. The traveling and hauling ways are wet and muddy. Henry Wilson is the mine boss.

### Courtney Mine

Is located at Courtney station, on the P. V. and C. railroad, and is operated by the Courtney Coal Company. It is worked by both double and single-entry system. The coal is hauled from the interior to the tipple house by stationary engine and wire rope. The ventilation generally is quite good. However, an explosion of fire-damp occurred in one of the entries on the first day of last July, which resulted in the death of William Galloway, and the serious burning of Daniel Campbell. These two men were engaged in driving a new entry, and, according to the evidence, it appears that in going to work on the morning of the accident, they called at the house of the mine boss to learn whether he had been in the mine to examine their entry or not, and learning that he had not, by reason of his illness, they proceeded to the mine and entered this entry. And fearing that gas might be present in explosive quantities, they concluded to try what is known among miners as the process of "brushing," for the purpose of throwing the gas, should there be any, out into the more vigorous air-current of the other entry, and thence out of the mine. After brushing a short time they entered with naked lights, when the gas exploded with the above-mentioned result. Mr. Galloway only lived until the evening of the following day.

I examined the mine soon after the accident, and found the face or head of the entry to be twenty-eight yards ahead of the air-course, with the air-current traveling through the air-way at the mouth of the entry at the rate of three thousand six hundred and forty cubic feet per minute, and at the outlet seven thousand eight hundred cubic feet per minute.

### Black Hills Mine

Is located a short distance below Courtney Station, and is a drift opening. The coal is nearly exhausted at this place. It is owned by Scott, Miller & Byers, and operated by I. B. Miller & Co.

### Garfield Mine

Is owned by Neel & Holmes, and operated by Jordan S. Neel. It is comparatively a new mine yet, and worked on the double-entry system. It is managed with a great deal of care. A large furnace has recently been built, which, with the full completion of the stack, will give it a capacity of thirty-five thousand cubic feet of air per minute. Henry Wright is mine boss.

### Buffalo Mine

Is owned and operated by J. J. Steytler. The coal is shipped by rail. It is a very old mine, and operated on the double-entry system. Ventilation is produced by a six foot Champion fan, which does not give entire satisfaction, owing to the great length and condition of the air-ways. This will soon be remedied by a shaft which they propose to sink at the head of the workings. One explosion of fire-damp occurred in this mine during the year, which resulted in burning two men quite seriously but not fatally.

### Cincinnati Mine

Is situated near Huston station. It is owned by the Fifth National and Tradesman's National Banks of Pittsburgh. This mine is now undergoing some important changes in the workings, which have been much needed for some time. The ventilation has not been good, owing to the condition of the air-ways and the distance which the air had to travel. The north part of the mine produces considerable quantities of gas, and much care was necessary in keeping the air-current properly moving all the time. The stoppage of the air-current for fifteen or twenty minutes was liable to cause an explosion at the head of the workings, but this part of the mine has been abandoned for the present, owing to a squeeze or closing of the principal working entry, which has cut off all access in that direction. They are now engaged in opening up the south part of the mine, which has been standing idle for several years, with fair prospects of yet being able to reach all the remaining coal from that side.

### Coal Bluff Mine.

This mine has not been in operation for the past year. It has been recently sold by George A. Logan to a new mining company represented by A. Dempster, of Pittsburgh. They are repairing and improving the mine in various ways with indications of doing a large business when ready to run. The double-entry system prevails here.

### Cliff Mine

Is also a drift mine, operated by Sculley & Co. The coal is run to the river. This mine is in good order in every respect. It is operated on the double-entry system. During the past year they have obtained a stationary engine and wire rope, for hauling the coal out of the mine, which will add largely to their running capacity in the future. Robert Greenhalgh is the mine-boss.

### Banner Mines

Are owned and operated by Gamble & Risher. They ship by both river and rail. These mines are well laid out and operated with commendable care and judgment. They have a very powerful furnace which produces a vigorous air-current in all parts of the mines. Westley French is the mine-boss.

### Shire Oaks Mine

Is operated by Lynch & Stone, and is a drift opening. This mine is operated on the single-entry system, and at the time of my visit I found some of the men working a long distance ahead of any perceptible air-current, which is very apt to be the case under that system, especially when sub-air-courses are not driven at proper intervals so as to keep the air-current actively circulating well up to the head or face of the workings.

### Jefferson Mine

Is located in Jefferson township, Allegheny county, and is a drift opening. Operated by Foster, Clark & Co. This mine is worked partly on the double-entry system, and ventilated by steam exhaust. This mine is recently much improved by driving an additional entry for a water course. They are arranging for the construction of a furnace. David Allen is mine boss, and Thomas Foster superintendent.

### Pine Run Mines,

Located in the same township, is a drift opening, and operated by James Lynn & Co. The old field of coal is nearly worked out, but the company have opened up a new field, which is in good condition. John O'Neil is superintendent.

### Allequippa Mines

Are in good working order. They employ about one hundred and fifty men, and are operated by Bailey, Wilson & Co.

### Fulton Mines

Are operated by T. Jones & Co. This is a drift mine, and in good condition, ventilated by furnace power. John Ralf is the mine boss.

### West Elizabeth Mines

Are owned and operated by Joseph Walton. They consist of two separate mines or outlets with underground connections.

### Camden Mines

Are operated by George Lysle & Sons. It is a drift opening, and in good order in every respect. The coal of this mine passes over two inclines on its way from the pit mouth to the river. Peter Steiner is mine boss.

### Amity Mine

Is operated by J. C. Risher & Co. This is one of the largest mines on the river, and in good working order. Ventilation produced by furnace power.

### Stone's Mine

Is operated by Coal Valley Coal Company. It is worked by the single-entry system. I found the ventilation quite defective. They propose building a furnace and adopting the double-entry system, which will be a great improvement to this mine. George Stone is general superintendent.

### Neel's Mine

Is operated by Harvey Hutchinson, and is a drift opening. The coal is nearly exhausted and the pillars are being taken out.

### Bellewood Mine

Is operated by Munhall Bros. It is a new mine and in good order. John Munhall, superintendent.

### Street's Run Mine

Is operated by J. D. Risher. It is a drift opening and ventilated by furnace power. John Brown is the mine boss.

### Walton Mines

Are operated by Joseph Walton. The ventilation is not good at these mines. Morris Capp is mine boss.

### American Coal Mines

Are operated by Jones & Laughlin. These mines are in good working condition. Ventilation produced by furnace power. Carbonic acid gas is generated to a considerable extent. The coal produced at these mines is mainly consumed at Jones & Laughlin's rolling-mill in Birmingham.

### Keeling Mines No. 1 and 2

Are operated by the Birmingham Coal Company. They are located four miles from the river, and the coal is conveyed by two stationary engines, wire rope, locomotive, and incline, to Birmingham and the river. These mines produce twenty-five thousand bushels of coal per day. Ventilation produced by exhaust steam from the steam pumps in the mine. *Fire-damp* and *black-damp* are both generated in large quantities. John Malone and John Spinnyweaver are the mine bosses.

### Fairhaven Mines

Are operated by the Castle Shannon Coal Company. They are opening up a new field of coal in addition to the working of the old mines. These mines are in good working order.

### Enterprise Mines

Are operated by Hartley & Marshall. They are operated by a slope. These mines are quite extensive, and are ventilated by a furnace and fan. They use two stationary engines to haul the coal from the mines. Much fire-damp is produced, and great care is needed to prevent explosions.

### Gray & Bell Mines

Are located on Saw Mill Run, and consist of three separate mines. They are in good condition, and the coal is nearly exhausted. Martin Gray is general superintendent.

### Eclipse Mine

Is operated by Carlin & Co. This mine is in very fair condition, and ventilated by a fan, which produces forty-two thousand cubic feet of air-current at the outlet.

## MINES ON THE P. S. RAILROAD.

### Segler Mine

Is owned by Jacob Segler, and operated by Young & Co. It is worked by the single-entry system, and the coal is transported by rail.

### Anderson Mine

Is owned and operated by Dr. David M. Anderson. It is a drift opening, and worked by the single entry system as yet, but will soon be changed to the double-entry system, by the increased extension of the workings. The coal is transported by rail, mainly to Washington and Waynesburg. A portion of it is also reshipped at Washington, and transported to the Wheeling market, where it is sold for gas purposes.

## CHARTIERS VALLEY RAILROAD.

### Harding Shaft

Operated by Thomas Simons. The coal here underlies the ground surface, and is reached by a perpendicular shaft one hundred and fifty-five feet in depth. They also have another shaft for ventilation. Exhaust steam is the motive power. I found a trace of fire-damp in one of the cross-headings at the time of my visit.

## P. C. AND ST. L. RAILROAD.

### Keystone Mines

Are operated by the Keystone Coal Company. They employ forty-seven miners and seven day men. These mines consist of two face-headings and seven butt-headings, two inlets and two outlets, and twenty-eight hundred acres of coal mostly undeveloped. There are no mechanical arrangements for ventilation. S. S. Davidson is mine-boss.

### Block Coal Mines

Are operated by W. G. Crawford & Co. The south part of these mines contains what is called *block coal.* Ventilation produced by exhaust steam. The coal from both sides of the mine is hoisted up a shaft to the tipple floor, a height of fifty feet. John C. Cram is mine-boss.

### Primrose Mine

Is operated by the Robins Block Coal Company. They employ one hundred and ten miners, six day men inside, and twelve outside. Ventilation by exhaust steam, which is quite satisfactory, except in No. 4 entry. They contemplate placing a stationary engine in position to haul the coal from the mine, which will greatly relieve their mule power. William Noble is the mine-boss.

### Laurel Hill Mines

Are operated by W. P. Rend & Co. These mines are in good order. The coal is mined by machines operated by compressed air-power, which appears to do the work well. Ventilation by furnace power. Charles McDonald is mine-boss.

### National Mines

Are operated by the National Coal Company. These are old mines and not in very good condition. They intend soon to use machinery here for hauling the coal from the mines. Sixty-five miners and seventeen day men are employed here. Edward Fisher is the general manager.

### Oak Ridge Mine

Is operated by Oak Ridge Coal Company, and in good working condition. I found fourteen thousand four hundred feet of air traveling through the mine. George Schuderberg is superintendent.

### Grant Mines

Operated by W. L. Scott & Co. This is a very old mine, and a large amount of coal yet remains behind the main workings which is difficult to get at. Furnace ventilation. J. B. Stone is the mine-boss, and James Matthews superintendent.

### Camp Hill Mine

Is operated by David Steen & Son. It is a new mine and well ventilated. The drainage is not good at present, but will soon be remedied by a new entry that is now being driven from the rear part of the mine.

### Mansfield Mines

Are operated by the Mansfield Coal and Coke Company. They are two in number and are located in North Mansfield. Ventilation at one of the mines is produced by furnace power. They are in fair working condition. B. B. McDowell is the mine-boss.

### Montour Mine

Is operated by the Imperial Coal Company on Montour railroad, a branch from the Pittsburgh and Erie railroad. The traveling-ways are wet and muddy, and the ventilation is not good. I could not find a place in the whole mine where the air-current was vigorous enough to move the anemometer, except at the furnace, where it indicated twenty-two thousand feet of air passing per minute. This shows the existence of numerous leakages in the mine which should be remedied by proper doors and stoppings put in place. Abel Dore is mining-boss, and C. R. Brown the superintendent.

### Beach Cliff Mine

Is owned and operated by the Imperial Coal Company. It is in good order. G. P. Bird is the mining-boss, and C. R. Brown the superintendent.

## MINES ON THE SOUTH-WEST PENNSYLVANIA RAILROAD.

### Fairchance Mine

Is located at Fairchance on the railroad. It is a small mine. Ventilation and drainage not good. The coal is coked and used at the company's furnace.

### Oliphant Mine

Is also a small mine, and in fair working condition. It is operated by the Fayette Coke Company.

### Redstone Mines

Are operated by J. W. Moore & Co. These mines are in good condition.

### Leith Shaft Mine

Is operated by the Connellsville and Chicago Coke Company. This mine is well ventilated, but has a very bad roof with fire-clay bottom, which gives much trouble in working.

### Stewart Mine

Is operated by the Stewart Iron Company. I found this mine in very good condition. Mr. Jeffrey is mining-boss, and Mr. Thomas is the superintendent.

### Lemont Mines

Are operated by Hogsett, Hanna & Co. Ventilation is not good. They are working the iron ore from under the coal on the long-wall system, which succeeds well. Robert Lang is superintendent.

### Youngstown Mines

Are operated by the Youngstown Coke Company. I found this mine in good working condition.

### Percy Mines

Are operated by the Percy Mining Company. It is a small mine, and the ventilation is not good. Considerable quantities of *fire-damp* is generated. The company are sinking a shaft for ventilating purposes, which will add much to the condition of the mine.

### Mount Braddock Mine

Is operated by A. O. Tinsman & Co. Ventilation is not good here, as the air-ways are not in proper condition to regulate the direction and flow of the air-current. Small quantities of light carbureted hydrogen gas are generated. William Miner is mining-boss, and William Bell is superintendent.

### Ferguson Slope Mine

Is operated by the Dunbar Furnace Company. It is in good condition, as is also the *Hill Farm Mines*, operated by the same company.

### Deer Park Mine

Is operated by the Mahoning Coke Company. It is in good order. Bath Worming is mine-boss.

### The Pittsburgh and Connellsville Gas Coal and Coke Company Mine

Is operated by a shaft. It is located a short distance below Connellsville, and ventilated by a six foot fan located at the top of a slope. The coal is reached by a shaft. This company are opening a new drift mine called the Plummer Mine. W. C. Stillwagon and Plummer T. Louder are mine-bosses.

### Trotter Shaft Mine

Has been fully described in previous reports. I found it in first-class order. Elijah Parker is mining-boss.

### Leisenring Shaft Mine

Is operated by the Connellsville Coke and Iron Company. The shaft is three hundred and seventy-five feet in depth. They also have another shaft for ventilating purposes. These are new mines and not sufficiently advanced for general description. J. K. Taggart is superintendent.

### Wheeler Slope

Is operated by the Cambria Iron Company. It is a small mine, and in fair working condition.

### Morrell Slope

Is operated by the Cambria Iron Company. It is a very large mine, and in good condition, excepting one entry, where the ventilation is not good. James F. Beatty is superintendent of this, and the Wheeler slope mine.

### Tyrone Mines

Are operated by Laughlin & Co. The whole of these mines are undergoing general repairs. C. Wharton is the superintendent.

### Sterling Mines

On the main branch of the Baltimore and Ohio railroad, are operated by J. M. Schoonmaker. The coal here is nearly all worked out.

### Sterling Mines

On the Hickman branch, are operated by J. M. Schoonmaker, and in good condition. Joseph Laughrey is the superintendent.

## MINES ON THE SALISBURY BRANCH OF BALTIMORE AND OHIO RAILROAD.

There are nine mines on this branch. The coal is of the semi-bituminous quality, and the operation of mining is performed by blasting the coal entirely from solid breasts, which produces large volumes of powder smoke, that leave the mines in an unhealthy condition, without a much stronger ventilating power than is usually found to be employed.

### Dunbar Coke Mines

Are operated by Colvin & Co. Ventilation is not good. They are constructing a man-way which will improve the ventilation very much when completed. A. H. Sullivan is mine-boss.

### Anchor Mine

Is operated by Morgan, Lang & Co. I found plenty of air entering these mines, but it is not properly carried to the face of the workings. I found the entrance to the man-way almost closed. John Warman is mine-boss.

## MINES ON THE MOUNT PLEASANT BRANCH RAILROAD.

### H. C. Frick & Co.'s Mines

Are nine in number. I found them all in fair condition, particularly the Valley and Summit mines. They are building a number of large ventilating furnaces, one of which, located at the Summit mine, has a capacity of fifty thousand cubic feet of air per minute. Thomas Lynch is general superintendent, and B. P. Howell is mining engineer.

### Kiffer Mines

Are operated by William Kiffer. It is a small mine, only employing thirteen men at present. The coke manufactured here is consumed at Scottdale. W. H. Brown is mine-boss.

### Furnace Mine

Is operated by Everson, Macrum & Co. This is a small mine, only employing twenty-four miners.

### Dexter Mines

Are operated by Joseph Stauffer. These are small mines, and only employ about fifteen men. They are opening up a new field of coal, and are now principally working on pillars.

### Fountain Mine

Is operated by J. D. Boyle. It is a small mine, only employing about fifteen men. I found the workings in bad condition, but they are driving a water-course, which, when completed, will greatly improve the mine.

### McClure & Co. Mines

Are three in number. These mines are in good condition, although not working at the time of my visit.

### Franklin and Clinton Mines

Are operated by James Cochran. I found them in good condition. Samuel Barnum is superintendent of both mines.

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## FATAL ACCIDENTS.

THOMAS KUNKLE, January 12, killed at Six Mile Ferry. He was not employed in the mine, but had gone in with his father to see the mines. He had been in but a few moments before he was killed by a fall of roof, in the room where his father worked.

LOUIS MEYERS, January —. Lewis Meyers was not employed, but had gone into the mine to ask charity from the miners for a blind man in his charge. While talking to one of them in the room, the slate fell on him resulting in death.

WILLIAM HOUGH, January —, a miner employed by James Harris & Co., at Bargeddie mine, was killed by a fall of slate in the room where he was working.

THOMAS EVANS, miner at Eclipse mine, (J. S. Neel, operator,) was fatally injured by falling slate. He died some six days afterwards.

SAMUEL HAUK, a miner, December 21, was instantly killed by falling slate in Pine Run mine, James Lynn & Son, operators. He left a wife and six children to mourn his untimely death.

GOTLEIPH COOK, a miner employed at Amity mine, (J. C. Risher, operator,) was instantly killed by a fall of slate on November 24, aged — years. He left a wife, but no children.

SAMUEL LIVERGOOD, August 2, killed by a fall of coal in Thomas Williams' mine, Somerset county. (See inquest.)

PAUL KUNKLE was killed June 9, by being run over by a car at Joseph Walton & Co.'s Upper Road. Kunkle was not employed at the mine at the time of the accident, but was hunting work. He and some others had been up at the mines, and they boarded the coal cars to have a ride down to the P. V. & C. R. R., and when they got near the railroad Kunkle fell off under the wheels, with the above result. An inquest was held, and a verdict of accidental death rendered.

LAWRENCE SNYDER, a miner employed by the Birmingham Coal Company, South Side, Pittsburgh, killed July 28, by explosive gas. (See another part of this report for details.)

NICHOLAS FLAUS, a miner employed by the same company as above, was killed by explosive gas. (See another part of this report for more definite information.)

WILLIAM GALLOWAY, a miner employed by the Courtney Coal Company, Courtney, was fatally burned by an explosive gas on the morning of July 1. He left a wife and two children to mourn his untimely death. (For a more extended report of the above, see another part of this report.)

GEORGE SHOUTS, a miner working for T. J. Woods, at the Caledonia mine, Wood's run, was killed July 28, by a fall of roof. While posting main entry, Shouts and Mining-boss Roadsmen were working on the night shift. While making ready for a set of timbers a large piece of roof came down with the above results.

JOHN LOUIS, February 9, was a driver in the Enterprise mine, O'Neil & Co. He missed his step and fell under the wagons and was dangerously injured. He died on the 17th.

JAMES STEVENSON and his son Richard were killed by a fall of slate at Turnbull & Hall mines. They had removed the props from under the slate in order to take it down, when a part of it fell, and in attempting to move the fall, were caught under a large fall and instantly killed. This accident happened March 1.

WILLIAM JONES, March 4, employed as a miner at Fulton colliery, was removing timber when a heavy fall occurred which caught him, resulting in his death a few hours later.

GRANT LIXHAM, a miner at Mount Braddock mines, was so seriously burnt by explosive gas, that he died some ten days aftewards.

JOSEPH REED, a miner at Knob Colliery, Knob Coal Company, West Brownsville, killed November 15, by a fall of slate. Single, aged forty-eight.

ROBERT POLLOCK, employed as a rope rider at the slope of Stewart Iron Company, was killed, November 20, by a wagon jumping the track and catching him on the coal rib, thereby squeezing him to death. Pollock was a single man, aged twenty-three.

SOLOMON CADMAN, a miner at the Fulton mine, (George Jones & Co.,) West Elizabeth, was fatally injured April 10, by a fall of the upper slate. Cadman was drawing posts out of an old room to let it fall in, when the slate fell on him injuring him so badly that he died the next day. He leaves a wife and three children to mourn his untimely death.

ROBERT SIMSON, a boy, aged fourteen, working at the Allequippa mines, (Baily, Wilson & Co.,) was instantly killed, April 13, by being run over by a trip of coal cars. He was helping to take the trip through the hill and supposition is that he fell off the cars with the above result.

THOMAS ELLSWORTH MASSEY, a miner employed by Louis Staib, at Catsburgh mines, was killed instantly, April 19, by a fall of slate; he was knocking coal and did not secure his own safety with sufficient posting. His attention was drawn to the looseness of the slate by the person who was working with him, but it seems he paid no heed to the warning given him and paid for his rashness with his life. Aged about nineteen.

CHRIST. KINDLE, a miner working at Foundry mines, (H. C. Frick & Co.,) was instantly killed, May 1. Kindle had taking out all the coal off a pillar that he was allowed to and had commenced to take out the posts when the roof fell on him. He was a single man, aged twenty

LOUIS BETERLER, a miner at Harvey Hutchinson mines, McKeesport, was killed instantly May 5, by a fall of coal and slate. He had undermined a cut of coal the night before and put a shot in it, but the shot did not bring it down; so the next morning he commenced to make it deeper but he did not get much of it done when slate and coal fell on him with the above result. Beterler was a single man, aged twenty.

F. EARKIRN, employed at the lower mines of Jos. Walton & Co., West Elizabeth, was killed May 8, by a fall of horse-back, in sixteen entry, room 54. An inquest was held on the body, and a verdict of accidental death rendered. He was about thirty-seven years old. He leaves a wife and three children to mourn his loss.

O. HARDING, a miner, at Joseph Keeling's & Co., Pittsburgh, was seriously hurt, May 8, by a blast. A man who worked next room to Mr. Harding had occasion to fire a shot next to the pillar between Harding and himself; the pillar not being very thick the shot blew through it, injuring Harding so badly that he died the next day. The man in the next room notified him that he was going to fire, and Harding left his room for safety, but got impatient waiting on the shot to go off, and started up his room to go to work, and just as he was going up the room the shot went off with the result stated above. He left a wife and five children. Aged about forty-five.

JOHN KAIRNS, a miner, employed at Banner Mines, (Gamble & Risher's,) Shire Oaks, was killed May 11, by a fall of slate. Kairns was a single man, aged thirty-nine.

ISAAC LEE, WILLIAM SHIELDS, and WILLIAM NATROSS, miners, employed by the Connellsville Gas Coal Company, at Trotter Shaft, were fatally burnt by explosion. These three unfortunate men were drawing pillars at the time of the explosion. The fire-boss had examined their places a few hours before, and he could not find any fire damp present, but during his absence a fall took place, and threw a large quantity of gas off which ignited from their naked lamps, burning them so badly that they suffered till the 19th, 25th, and 27th respectively, till death relieved them.

MICHAEL WIELAND, a miner, employed at the Frick mines, (H. C. Frick & Co.,) operators, was killed instantly, October 25, by a fall of horseback. (See inquest.)

### NON-FATAL ACCIDENTS.

#### Ivil Mines.

JOHN SULLIVAN, September 25, was a trapper boy in Ivil mines, and was run over by the wagons, injuring him very seriously on one of his feet.

WALTER HALLET, October 6, a boy aged seven years, was gathering coal at Walton's lower road; the little fellow jumped on the coal cars and fell off them with his hand across the rail, and the cars running over his hand, cut it off. None of the family was employed by the firm at the time of the accident.

DANIEL HOGE, January —, injured slightly by a mule at the Empire mine.

HARRY JONES, January —, foot injured by wagons at Beech cliff.

ADAM SPEESE, January —, hurt by a fall of slate at Catsburgh mine.

WILLIAM RICHARDS, February 21, hurt by wagons at Amity mine.

HUGH McCOMBS, February 28, hurt slightly by falling slate at Allequippa mine.

LOVENS BERMHARD, March 10, leg broken by a fall of slate at Oak Ridge mine.

JOSEPH KOTZE, March 9, seriously injured at Grant mine by a fall of slate.

JOHN WATSON, March 26, leg broken by a fall of coal at Mount Equity mine.

JOHN BRONSON, March 17, injured by a fall of slate at Alps mine.

JOHN PATTERSON had one arm and two ribs broken by being caught by a wagon, coming up the incline plane, at the McConnell mine, April 28.

DENNIS WHITE, May 26, had some slight bruises on head, and two toes smashed, by falling slate, in Joseph Walton's lower mines.

JOSEPH CLARK, June 7, was slightly hurt in Ivil mines, by being run over by empty coal cars. He was at work in a few days.

Thomas Wilkinson and William Jackson, June 21, seriously burnt in Buffalo mines, by explosive gas.

Joel Ashton, October 8, had two ribs broken, by being crushed between empty cars, in the Morrell slope.

James Jenkins and John Reese, August 3, burnt slightly by fire-damp, in Cincinnati mine.

John Wood, October 18, was slightly hurt in Allequippa mine, by being caught between two wagons while riding out.

William Doubt and John Doubt, October 27, were seriously burnt by explosive gas in Hartley & Marshal mines, Saw-Mill run; they were working on a pillar, when a fall took place, bringing with it a large quantity of fire-damp, which ignited from their naked lamps, resulting as above.

George Luehm, June 21, was seriously hurt by falling slate, in Courtney mines.

N. Lorson, June 23, hurt by falling slate, in Joseph Walton mines.

M. Markey and John Martus, June 23, burnt by explosive gas, at Leith colliery.

John Cooper, July 28, injured by falling slate, in Phœnix mine.

Daniel Campbell, July 1, burnt seriously by explosive gas, in Courtney mines. (See another part of this report for details.)

David Morris, September 5, injured by a fall of slate.

Commonwealth of Pennsylvania, } *ss :*
Fayette County, }

An inquisition, indented, and taken at Broad Ford, in said county, on the 25th day of October, 1882, before me, R. Campell, a justice of the peace of the county aforesaid, upon the body of Michael Weiland, then and there lying dead, upon the oaths of Johnson Eccles, W. H. Thomas, Pat. O'Donald, Henry Dill, John Arnold, W. C. Miller, good and lawful men of the county aforesaid, who being sworn to inquire, on behalf of the Commonwealth, when, where, how, and after what manner, the said Michael Weiland came to his death, do say, upon their oaths, that the aforesaid Michael Weiland came to his death by a fall of what is known as horseback, in what is known as Frick mine, situated at Broad Ford, in said county of Fayette, while at work in said mine. Cause, accidental. The company is exonerated from all blame—no fault of any one.

In witness whereof, as well as the aforesaid justice as the jury, have to this inquisition put their hands and seals, this day and year, and at the place just above mentioned.

R. Campell,
*Justice of the Peace.*

| | | | |
|---|---|---|---|
| Johnson Eccles. | [seal.] | Henry Dill. | [seal.] |
| W. H. Thomas. | [seal.] | John Arnold. | [seal.] |
| Pat. O'Donald. | [seal.] | W. C. Miller. | [seal.] |

Evidence taken by the inquest on the death of Samuel J. Livergood, a miner working at the colliery of Thomas Williams, in Elk Lick township, on the third day of August, 1882.

George Robinson, after being duly affirmed, testified that he worked with S. J. Livergood, in the colliery of Thomas Williams, in Elk Lick township, and that on the second day of August, 1882, he left Livergood in the room while he went out to bring a rail to extend the track. Was gone from five to eight minutes. When he got back he found a lump of coal weighing about six hundred pounds lying on the head of Mr. Livergood. He then called Mr. William Cochran to the breast of the room that his butty was killed. Mr. Cochran called Richard Shinaway to come also, and the three together then raised the lump of coal and took out Mr. Livergood, who was dead.

From this evidence, the jury agreed on a verdict of death by accident, without attaching any blame on any one.

R. S. HAY,
*Foreman.*

### RULES ADOPTED BY THE CAMBRIA IRON COMPANY, FOR THE REGULATION OF THE COAL MINES BELONGING TO THAT COMPANY.

#### General Order No. 3.

1. On and after this date it shall be the special duty of all mining-bosses in the coal mines of the Cambria Iron Company and the Blair Iron and Coal Company, to visit and examine the rooms in their respective mines as frequently as their duties will permit, giving particular attention to and examination of the roof-slate or bony coal in each room. If this is found loose, so it may fall with the coal, or can be easily pulled down, then it must be taken down as the room advances, either with the coal or immediately after it.

2. When the bony coal or slate does not come down with the coal, and is not easily removed by wedging or other means, then it must be carefully propped as the work of removing coal advances, pains being taken not to permit a longer section of it to hang than is usually left between the props. In case of a friable roof, the mining-bosses are directed to require the miners to place caps on the props, to prevent a drop of roof between them.

3. The mining-boss is directed to give particular attention to the rooms worked by recently employed miners, and to such others as are inclined to be careless or risky. The mining-boss will give any miners who fail to take the roof down or prop securely, immediate notice. If prompt compliance is not rendered, then it will be his duty to stop the cars to such miners, and report their case to the superintendent of mines.

4. The superintendent and mining-boss will see that an ample supply of props and caps are kept on stock for this purpose, so as to enable miners to comply promptly with these requirements.

5. The mine turn-keeper will see that props and caps reach their proper destination as soon as possible.

6. The superintendent of mines will give careful attention to the foregoing orders, and see that they are carried out in good faith.

Their design is to avoid casualties and save life.

It is confidently hoped that all miners will cheerfully coöperate in carrying out these orders, and by so doing increase their own safety.

See sections five and six of ventilation act of April, 1877.

JOHN FULTON,
*General Mining Engineer.*

APPROVED: D. J. MORRELL, *General Manager,*
*Office Cambria Iron Company, Johnstown, July 10, 1881.*

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### RULES AND REGULATIONS OF THE ENTERPRISE COAL WORKS WORKINGMEN'S DEATH AND ACCIDENT SOCIETY.

#### Object.

The object of this Society shall be: First, To create and disburse money for the benefit of its members by paying stipulated sums in case of accident or death. Second to discontinue the pernicious practice of making collections.

#### Name.

This Society shall be known as the Enterprise Coal Works Workingmen's Death and Accident Society, and shall consist of men and boys who are employed in and around the Enterprise coal works, and shall be governed by a president, vice president, recording secretary, treasurer, and an investigating committee of three.

#### Duties of Officers.

1. The president shall preside at all meetings, shall sign all orders drawn on the treasury, shall have power to call special meetings when requested to do so by not less than ten members, shall have no vote except on a tie, and perform such other duties as his office may require.

2. The vice president shall preside in the absence of the president.

3. The recording secretary shall keep a faithful record of all preceedings, and keep account of all moneys paid in and out of the society, sign all warrants drawn on the treasury, and make a report every three months.

4. The treasurer shall receive all money and give his receipt for the same, and pay all warrants signed by the president and attested by the secretary.

5. The investigating committee shall visit disabled members at least once a week after receiving notice of an accident.

6. Every three months the president shall appoint three members, who shall serve as an investigating committee for the next three months. They shall be appointed in the regular order as they stand on the books.

#### Dues.

1. Every member shall have twenty-five cents per month stopped off his wages until a fund of two hundred dollars is accumulated.

2. All boys working shall pay according to their work, up to eighteen years of age, half dues, and receive half benefits : *Provided*, A young man under eighteen years of age, working a man's work, and paying full dues, shall be entitled to full benefits.

3. The committee shall have power to call a levy when funds are depleted.

### Benefits.

1. If a member dies the society shall pay fifty dollars to those who are entitled to receive it ; a member's wife, it shall be forty dollars ; a member's child, between the age of twelve and eighteen, it shall be thirty dollars ; a child between the age of one and twelve years, twenty dollars ; below one year, and not still born, it shall be ten dollars.

2. *Provided*, No funeral benefits shall be paid to any member's family when said family is not residing within four miles of the works.

3. Any member living with his mother, the same being a widow, or living with his sister or daughter (if over eighteen years,) shall receive the same funeral benefits as if either was a wife.

4. Any member happening an accident while following his employment, shall receive five dollars per week for first six months ; for next six months it shall be two dollars and fifty cents, when they shall cease from receiving benefits from the same accident ; but not to receive anything for the first week. Any member, while receiving benefit of the fund, shall not be out of the house after 9 o'clock, P. M., nor be seen in a tavern, nor under the influence of drink, nor do any work without the consent of the committee.

5. A general meeting will be held on the second Monday in May, for the election of officers. All officers to be elected by ballot.

6. Any officer neglecting to attend his duty, without a reasonable excuse, shall be fined ten cents for each offense. The excuse shall be work, sickness, or away from home.

7. Members receiving accidents shall notify the investigating committee within forty-eight hours when they want to lay themselves on the fund, and shall become beneficial only from date of notification.

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### RULES AND REGULATIONS OF THE INDEPENDENT ASSOCIATION OF CATSBURGH MINES.

RULE 1. At the death of any person employed at Catsburgh mines the sum of one dollar shall be kept off each and every man, at the pay-office, by the pay clerk. The wife shall receive the sum of one hundred dollars for the purpose of defraying funeral expenses of the some. *Provided*, his death has not been through the effects of intemperance or suicide or riotous conduct or visiting any public houses or public amusements, or while attending any conventions or while on any excursions.

RULE 2. On and after this date one dollar shall be required of each and every new miner or laborer employed hereafter to be deducted out of his first pay, and twenty-five cents as dues stopped off each and every man every month for the purpose of paying benefits to those who are injured at the mines or works.

RULE 3. At the death of the wife of any person who has been employed thirty days at the Catsburgh mines and who was in good health when employed by the company, the sum of fifty cents shall be deducted at the pay-office by the pay clerk and paid to the secretary of the pit committee and he shall pay the same to the treasurer. The husband shall receive the sum of fifty dollars for the purpose of defraying funeral expenses of said wife.

RULE 4. All persons employed at the Catsburgh mines except the drivers are prohibited from riding on the wagons of these mines, and any person receiving any injury by disobeying this rule, shall not be entitled to any benefits of this association.

RULE 5. Any man or his wife dying at these mines, all work shall suspend at the hour set for the funeral to give the miners a chance to attend the same.

The above new rules have been approved, to go into effect July 21, 1882 The old rules are hereby set aside, and annulled.

By order of the Pit Committee.

**By-laws to govern the above.**

SECTION 1. In case a person employed at the Catsburg mines, is hurt so that he is unable to work, he shall at the end of each week, on presenting a certificate from his physician, receive five dollars.

SECTION 2. All orders drawn on the treasury shall be written by the secretary, and indorsed by the committee to make it legal. The treasurer shall pay this order on demand, and take a receipt from the committee for said amount.

SECTION 3. The pit committee shall hold office for one year, beginning May 1, 1882. In case of death, resignation or removal; the chairman shall fill the vacancy until the annual election, which shall take place the last Saturday in April, of each year.

SECTION 4. The regular meeting of the committee shall be each Saturday preceding pay-day.

SECTION 5. The treasurer shall give a bond sufficient to secure the amount placed in his hands, the amount of the same to be determined by the pit committee.

REV. J. W. ALEXANDER, *Chairman*,
JOHN LIVINGSTON,
DAVID BEHANNA,
JOHN COULTER,
THOMAS PHILBEE,
JOHN INGRAM, *Secretary*,
ISAIAH HAYWOOD, *Treasurer*,
*Pit Committee.*

## TABLE I.—SHOWING LOCATION OF COLLIERIES IN THE FIRST BITUMINOUS MINE DISTRICT.

| NAME OF MINES. | Name of Company. | Location—County. | Name of Superintendent. | Post-Office Address. |
|---|---|---|---|---|
| Montours, | Imperial Coal Company, | Allegheny, | | Imperial post-office. |
| Beech Cliff, | do. do. | do. | | do. do. |
| Phœnix, | Phœnix Gas Coal Company, | do. | F. C. Negley, | Fourth and Try streets, Pittsburgh. |
| Bell's Mines, | Mansfield Coal and Coke Company, | do. | Robert Bell, | Mansfield Valley. |
| American Iron Works, | Jones & Laughlin, | do. | Thomas M. Jones, | Pittsburgh. |
| Grant Mines, | Grant Coal Company, | do. | George Z. Hosack, | Mansfield Valley. |
| Camp Hill, | David Steen & Sons, | do. | W. J. Steen, | Fourth and Try streets, Pittsburgh. |
| Fort Pitt, | Fort Pitt Coal Company, | do. | J. E. McCrickart, | 337 Liberty street, Pittsburgh. |
| Pittsburgh Union, | Joseph McConnell, | do. | Joseph McConnell, | Walker's Mills. |
| Jackson, | James Ewing & Co., | do. | James Ewing, | do. |
| Cherry, | Morris McCue, | do. | Thomas Duffy, | Corner Third av. and Try st., Pittsburgh. |
| Oak Ridge, | Oak Ridge Coal Company, | do. | Geo. W. Schnederberg, | P. O. box 784, Pittsburgh. |
| National, | National Coal Company, | do. | Edward Fisher, | P. O. box 906, Pittsburgh. |
| Willow Grove, | T. B. Robbins & Co., | do. | T. B. Robbins, | Midway, Washington county. |
| Laurel Hill, | W. P. Rend & Co., | do. | Hugh Knox, | 413 Liberty street, Pittsburgh. |
| Glendale, | S. B. Gregg & Brother, | do. | S. B. Gregg, | Mansfield Valley. |
| Nixon, | Chartiers Valley Coal Company, | do. | | do. do. |
| Black Diamond, | William Bains & Brother, | do. | W. Bains, | Woodville post-office. |
| Summer Hill, | Frank Armstrong, | do. | A. A. Hadden, | Fourth and Try streets, Pittsburgh. |
| Bower Hill, | A. J. Schultz, | do. | A. J. Schultz, | Woodville post-office. |
| Six-Mile Ferry, | H. B. Hayes & Brother, | do. | John Watson, | Pittsburgh. |
| Beck's Run, | do. do. | do. | Peter Trautman, | do. |
| Street's Run, | I. D. Risher, | do. | Charles Giles, | Hope Church. |
| Pine Run, | James Lynn & Co., | do. | John O'Neil, | Coal Valley. |
| Jefferson, | Foster, Clark & Wood, | do. | Thomas Foster, | do. |
| Slope Mines, | W. J. Morgan, | do. | W. J. Morgan, | Bridgeville. |
| Allequippa, | Bailey, Wilson & Co., | do. | James Wilson, | Camden post-office. |
| Camden, | George Lyle & Sons, | do. | Joseph Griffiths, | do. do. |
| Rock Run, | W. J. Snodgrass & Co., | do. | J. S. Scott, | do. do. |
| Venture, | Gray & Bell, | do. | Martin C. Gray, | Banksville post-office. |
| Chess, | do. | do. | do. | do. do. |
| Coal Ridge, | do. | do. | do. | do. do. |
| First Pool Works, | Joseph Walton & Co., | do. | John Kapp, | Water street, Pittsburgh. |
| Lower Works, | do. do. | do. | John W. Rike, | do. do. |
| Upper Works, | do. do. | do. | do. | do. do. |
| Keeling Mines, | Birmingham Coal Company, | do. | Joseph Keeling, | South Side, Pittsburgh. |
| Eclipse, | John Carlin & Co., | do. | John Carlin, | Thirty-sixth ward, Pittsburgh. |
| Woods Mine, | Wentengel & Gormley, | do. | | do. do. do. |
| Nimick, | Thomas Fox, | do. | Thomas Fox, | do. do. do. |
| Enterprise, | Hartley & Marshall, | do. | Roger Hartley, | Banksville post-office. |
| Amity, | J. C. Risher & Co., | do. | S. S. Crump, | Dravosburg post-office. |
| Enterprise, | O'Neil & Co., | do. | | West Elizabeth. |
| Fulton, | George Jones & Co., | do. | Thomas M. Jones, | do. |
| Bellwood, | Munhall Brothers, | do. | John Munhall, | Homestead. |
| Castle Shannon, | Pittsburgh and Castle Shannon railroad, | do. | James M. Bailey, | Pittsburgh. |
| William Stone, | William Stone's heirs, | do. | George W. Stone, | McKeesport. |

## TABLE I—FIRST BITUMINOUS MINE DISTRICT—*Continued.*

| NAME OF COLLIERY. | Name of Company. | Location—County. | Name of Superintendent. | Post-Office Address. |
|---|---|---|---|---|
| Green Springs, | Thomas Fawcett, | Allegheny, | | |
| Catsburgh Mines, | Louis Staib, | Washington, | Adam Kell, | Monongahela City. |
| Ivill Mines, | James Jones, | do. | James Jones, | do. |
| Garfield, | J. S. Neel, | do. | Milo Gibson, | No. 10 Smithfield street, Pittsburgh. |
| Cincinnati, | do. | do. | do. | do. do. do. |
| Banner, | Gamble & Risher, | do. | James Gamble, | Shire Oaks post-office. |
| Cliff, | Scully & Co., | do. | Robert Greenhalgh, | Coal Bluff post-office. |
| Black Hills, | I. B. Miller & Co., | do. | L. B. Miller, | Monongahela City. |
| Courtney, | Courtney Coal Company, | do. | John McGonegal, | Courtney post-office. |
| Stockdale, | Tomer & McGinley, | do. | Jacob Tomer, | Webster, Westmoreland county. |
| Black Diamond, | Louis Staib, | do. | Adam Kell, | Monongahela City. |
| Abe Hays, | Abe Hays Coal Company, | do. | T. S. Hutchinson, | do. |
| New Eagle, | Linsey & McCutcheon, | do. | do. | do. |
| Buffalo, | Chicago Gas Coal Company, | do. | George Lockhart, | Courtney post-office. |
| Keystone, | Keystone Coal Company, | do. | James M. Bailey, | Pittsburgh. |
| Allison, | J. Allison, | do. | J. Allison, | Washington. |
| Knob, | Knob Coal Company, | do. | S. H. Pearsoll, | West Brownsville. |
| Caledonia, | T. J. Woods, | do. | T. J. Woods, | Woods' Run. |
| Locust Grove, | W. S. White & Son, | do. | W. S. White, | Canonsburg. |
| Enterprise, | T. H. Simons, | do. | T. H. Simons, | do. |
| Cook's Mines, | John Cook, | do. | John Cook, | do. |
| Anderson, | D. M. Anderson, | do. | D. M. Anderson, | Venetia post-office. |
| Midway, | G. W. Crawford, | do. | | Midway post office. |
| Shupe, | Shupe & Co., | do. | Albert Shupe, | Canonsburg. |
| Robbins, | Robbins Black Coal Company, | do. | T. B. Robbins, | Midway post-office. |
| Brier Hill, | Patterson & Sauters, | do. | J. D. Sauters, | McDonald. |
| Clipper, | Clipper Coal Company, | do. | Charles Young, | Allenport. |
| Globe, | Crothers, Musgrove & Co., | do. | J. Crothers, | Woods' Run. |
| Primrose, | Robbins Black Coal Company, | do. | T. B. Robbins, | Midway post-office. |
| Union Valley, | Forsythe & Young, | do. | William P. Young, | Finleyville post-office. |
| Shire Oaks, | Hillsdale Coal Company, | do. | W. H. Lynch, | Shire Oaks post-office. |
| American, | F. H. Coursin, | do. | F. H. Coursin, | McKeesport. |
| Wood's Run, | | do. | do. | |
| Champion, | Morgan & Dixon, | do. | John Dixon, | California. |
| Neel's Mine, | J. S. Neel, | do. | Presley Forsythe, | Coal Centre. |
| Dexter, | Crothers, Musgrove & Co., | do. | J. Crothers, | Woods' Run. |
| Walnut Hill, | T. B. Robbins & Co., | do. | T. B. Robbins, | Midway. |
| Umpire, | Snowden, Graham & Co., | Fayette, | N. B. Hogg, | Brownsville. |
| Spring Grove, | Cochran & Keister, | do. | James Cochran, | Dawson post-office. |
| Wheeler, | Cambria Iron Company, | do. | James P. Beattie, | Connellsville. |
| Morrell, | do. do. | do. | do. | do. |
| Valley, | H. C. Frick & Co., | do. | Thomas Lynch, | Scottdale, Westmoreland county. |
| Tip Top, | do. | do. | do. | do. do. |
| Foundry, | do. | do. | do. | do. do. |
| Henry Clay, | do. | do. | do. | do. do. |
| Summit, | do. | do. | do. | do. do. |

| | | | | |
|---|---|---|---|---|
| Frick, | do. | do. | do. | do. do. |
| Eagle, | do. | do. | do. | do. do. |
| White, | do. | do. | do. | do. do. |
| Morgan, | do. | do. | do. | do. do. |
| Garrows', | James Garrows, | do. | Thomas Foulk, | California, Washington county. |
| Percy, | Percy Mining Company, | do. | Louis de Saulles, | Uniontown. |
| Penusville, | A. V. Tinstman, | do. | J. Tinstman, | Pennsville. |
| Trotter. | Connellsville Gas and Coal company, | do. | Henry Wickham, | Connellsville. |
| Leisinring, | Connellsville Iron and Coke Company, | do. | J. K. Taggart, | Leisinring. |
| Little Redstone, | James Rutherford, | do. | James Rutherford, | Fayette City. |
| Painter, | Rafferty & Donnelly, | do. | John M White, | Scottdale, Westmoreland county. |
| Diamond, | do. | do. | do. | do. do. |
| Leith, | Chicago and Connellsville Coke Company, | do. | Frank M. Reynolds, | Uniontown. |
| Furnace, | Everson, Macrum & Co., | do. | | Scottdale, Westmoreland county. |
| Dexter, | J. R. Stauffer & Co., | do. | Samuel Fairchild, | do. do. |
| Carondolet, | Frazer & Fry, | do. | H. B. Fry, | Fayette City. |
| Mount Braddock, | Mount Braddock Coke Company, | do. | W. E. Beal, | Mount Braddock. |
| Tremont, | John A. Wood & Son, | do. | S. B. Graham, | Bellevernon. |
| Youngstown, | Youngstown Coke Company, | do. | Fred. Keilley, | Uniontown. |
| Connellsville shaft, | Pittsburgh and Connellsv'e Gas and Coal Co., | do. | Charles Davidson, | Connellsville. |
| Plummer, | do. do. do. | do. | do. | do. |
| Snow Hill, | Alps Coal Company, | do. | Jos. Underwood, | California, Washington county. |
| Alps, | do. | do. | do. | do. do. |
| Fayette, | James Cochran, | do. | James Cochran, | Dawson. |
| Deer Park, | Mahoning Coal Company, | do. | N. F. Sanford, | Dunbar. |
| Lemont, | Hogsett, Hanna & Co., | do. | Robert Hogsett, | Lemont Furnace. |
| Bargeddle, | James Harris & Co., | do. | James Harris, | Wood's Run, Washington county. |
| Sterling, | J. M. Schoonmaker, | do. | Joseph Laughrey, | 115 Water street, Pittsburgh. |
| Jackson, | Jackson Mining Company, | do. | | Dawson. |
| Tyrone, | Laughlin & Co., | do. | | Broad Ford. |
| Fort Hill, | Cleveland Rolling-Mill Company, | do. | | Dawson. |
| Cora Mines, | J. Newmyer & Sons, | do. | George Newmyer, | do. |
| Franklin, | B. F. Keister & Co., | do. | B. F. Keister, | Broad Ford. |
| Clinton, | James Cochran & Co., | do. | P. J. Cochran, | Dawson. |
| Home, | Joseph Stauffer, | do. | | Scottdale, Westmoreland county. |
| Fairchance; | Fairchance Iron Company, | do. | | Fairchance. |
| Grace, | W. J. Rainy, | do. | L. Cochran, | Moyer's. |
| Oliphant, | Fayette Coke and Fuel Company, | do. | | Oliphant. |
| Red Stone, | J. W. Moore & Co., | do. | | Uniontown. |
| Hill Farm, | Dunbar Furnace Company, | do. | | Dunbar. |
| Furguson, | do. do. | do. | | Dunbar. |
| Uniondale, | J. M. Reid, | do. | | Dunbar. |
| Cedar Hill, | Morgan & Dixon, | do. | John Dixon, | California, Washington county. |
| Washington, | Sample, Cochran & Co., | do. | | Broad Ford. |
| Kiffer, | W. A. Kiffer, | do. | W. A. Kiffer, | Scottdale, Westmoreland county. |
| Anchor, | Morgan, Long & Co., | do. | | Dunbar. |
| Dunbar Coke Works, | Colvin & Co., | do. | | Dunbar. |
| Moyer's, | Cleveland Rolling-Mill Company, | do. | | Moyer's. |
| Enterprise, | Thomas Price, | Somerset, | | Garrett. |
| Maher, | Rody Maher, | do. | | Garrett. |
| Maher, | Samuel Adams, | do. | | Garrett. |
| Philson, | Samuel Philson, | do. | C. Kissinger, | Berlin. |
| Berlin, | B. D. Morgan & Co., | do. | B. D. Morgan, | Berlin. |

## TABLE I.—FIRST BITUMINOUS MINE DISTRICT—*Continued.*

| NAME OF MINES. | Name of Company. | Location—County. | Name of Superindent. | Post-Office Address. |
|---|---|---|---|---|
| Hirsch, | Baltimore and Cumberland Coal Company, | Somerset, | | Keystone Junction. |
| Shaw, | Cumberland and Elk Lick Coal Company, | do. | A. Chamberlain, | Meyersdale. |
| Cumberland, | Thomas Williams, | do. | Thomas Williams, | Elk Lick. |
| Keystone, | Keystone Coal Company, | do. | | Meyersdale. |
| Frog Hill, | Salisbury Coal Company, | do. | | Meyersdale. |
| Cochran, | Cochran & Son, | do. | | Meyersdale. |
| West Salisbury, | Thomas Williams, | do. | | Meyersdale. |
| Tub Hill mine, | W. J. Smith & Co., | do. | William Kirby, | Elk Lick. |
| Meyersdale, | Meyersdale Coal Company, | do. | | Meyersdale. |
| Buffalo, | Swede Iron and Coal Company, | do. | T. Hepplewhite, | Garrett post office. |
| Fairview, | Thomas Reese & Co., | do. | Thomas Reese, | Elk Lick. |
| Casselman, | Hoffman & Hocking, | do. | R. Frank Hoffman, | Meyersdale. |
| Hocking, | Hocking Coal Company, | do. | John T. Hocking, | Meyersdale. |
| Lane mines, | Sandy Run Coal Company, | Bedford, | John Langdon, | Hopewell. |
| Lane mines, | Juniata Valley Coal Company, | do. | | Hopewell. |
| Mount Equity, | Kemble Coal and Iron Company, | do. | William Kelly, | Riddlesburg. |
| Deval, | E. P. Jenkins, | do. | E. P. Jenkins, | Six-Mile Run. |
| Cunard, | R. B. Wigton, | do. | R. J. Wigton, | Six-Mile Run. |
| Defiance, | A. Covalt & Co., | do. | William Dasher, | Riddlesburg. |
| Rumel, | Rody Maher, | do. | | Six-Mile Run. |

**TABLE II.**—*A statement showing characteristics, number of employés, production, &c., of the respective collieries in the First Bituminous Mine District, for the year ended December, 1882.*

| NAME OF COLLIERY. | Character of Coal. (Bituminous or Semi-Bituminous.) | Slope, Shaft, or Drift. | Number of pumps. | Number of engines. | Horse power. | Number of boilers. | Number of miners—men. | Number of miners—boys. | Other employees. | Total employees. | Number of mules inside. | Number of mules outside. | Number of locomotives. | Total production of coal in tons. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Abe Hays, | Bituminous, | Drift, | ... | ... | ... | ... | 31 | 4 | 4 | 39 | 3 | 2 | | |
| Aliquippa, | do. | do. | ... | ... | ... | ... | 155 | ... | 11 | 166 | 7 | 4 | ... | 53,202 |
| American, | do. | do. | ... | ... | ... | ... | 50 | 4 | 2 | 56 | 3 | 1 | ... | 4 320 |
| Amity, | do. | do. | ... | ... | ... | ... | 151 | 16 | 24 | 191 | 10 | 4 | ... | 79,722 |
| Anderson, | do. | do. | ... | ... | ... | ... | 16 | 1 | 2 | 19 | 2 | 2 | ... | 1,481 |
| Banner, | do. | do. | ... | ... | ... | ... | 150 | 10 | 25 | 185 | 8 | ... | ... | 3.615 |
| Beck's Run, | do. | do. | 3 | 2 | 10 | 3 | 25 | ... | 8 | 33 | 4 | ... | ... | 1 645 |
| Beech Cliff, | do. | do. | 1 | 1 | 160 | 3 | 122 | 19 | 28 | 169 | 9 | 4 | ... | 6,263 |
| Belle Vernon, | do. | do. | ... | ... | ... | ... | 12 | 2 | 2 | 16 | 2 | ... | ... | 1,261 |
| Black Diamond, | do. | do. | ... | ... | ... | ... | 75 | 2 | 19 | 96 | 8 | 1 | | |
| Buffalo, | do. | do. | ... | 3 | 25 | 1 | 120 | 12 | 17 | 149 | 10 | ... | ... | 6.030 |
| Camden, | do. | do. | ... | ... | | ... | 165 | 13 | 38 | 216 | 13 | 5 | ... | 38,908 |
| Camp Hill, | do. | do. | 1 | 2 | 60 | 3 | 83 | 8 | 19 | 110 | 7 | 2 | ... | 9 832 |
| Carondelet, | do. | do. | ... | ... | ... | ... | 72 | | 10 | 82 | 6 | 6 | ... | 14 789 |
| Castle Shannon, | do. | do. | ... | ... | ... | ... | 115 | 20 | 11 | 146 | 6 | 2 | ... | 18,076 |
| Central, | do. | do. | ... | ... | ... | ... | 45 | 5 | 10 | 60 | 5 | ... | ... | 4,540 |
| Champion, | do. | do. | ... | ... | ... | ... | 53 | 8 | 5 | 66 | 4 | 2 | ... | 4 898 |
| Cliff, | do. | do. | ... | ... | | ... | 110 | 18 | 12 | 140 | 11 | ... | ... | 7,000 |
| Clinton, | do. | do. | 1 | 1 | 16 | 1 | 13 | ... | 2 | 15 | 1 | 1 | | |
| Connellsville Gas Coal Company, | do. | Shaft, | 2 | 2 | 107 | 4 | 70 | 2 | 5 | 77 | 4 | 2 | ... | 15,062 |
| Courtney, | do. | Slope, | ... | 1 | 16 | 1 | 61 | 4 | 8 | 73 | 3 | ... | ... | 4 843 |
| Cunard, | Semi-bituminous, | Shaft, | 2 | 1 | 40 | 2 | 26 | 3 | 4 | 33 | 4 | ... | ... | 10,600 |
| Deer Park, | Bituminous, | Slope, | 4 | 2 | 75 | 5 | 26 | | 18 | 44 | 7 | 5 | | |
| Diamond, | do. | Drift, | ... | ... | ... | ... | 21 | 2 | 5 | 28 | 3 | | | |
| Devals, | Semi-bituminous, | do. | ... | ... | ... | ... | 19 | 3 | 6 | 28 | 2 | 1 | ... | 17.320 |
| Eagle, | Bituminous, | do. | ... | ... | ... | ... | 26 | | 32 | 58 | 4 | 5 | ... | 40,850 |
| Enterprise, | do. | do. | | ... | ... | ... | 147 | 11 | 9 | 167 | 20 | 1 | ... | 49,948 |
| Enterprise, (Simon,) | do. | Shaft, | 1 | 1 | 30 | 2 | 27 | 3 | 6 | 36 | 2 | 2 | ... | 31,737 |
| Excelsior, | do. | Drift, | 1 | 1 | 1 | 1 | 40 | 3 | 3 | 46 | 2 | 1 | ... | 200 |
| Fairchance, | do. | Slope, | ... | 2 | 20 | 1 | 19 | 1 | 6 | 26 | 2 | 5 | ... | 5,000 |
| Fair Haven, | do. | Drift, | ... | ... | ... | ... | 110 | 20 | 12 | 142 | 8 | 2 | ... | 10,000 |

### TABLE II—*Continued.*

| NAME OF COLLIERY. | Character of Coal. (Bituminous or Semi-Bituminous.) | Slope, Shaft, or Drift. | Number of pumps. | Number of engines. | Horse power. | Number of boilers. | Number of miners—men. | Number of miners—boys. | Other employees. | Total employees. | Number of mules in-side. | Number of mules out-side. | Number of locomo-tives. | Total production of coal in tons. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Foundry, | Bituminous, | Drift, | 1 | 1 | ... | 1 | 18 | ... | 17 | 35 | 3 | 1 | .. | 35,100 |
| Franklin, | do. | do. | ... | ... | .. | .. | 13 | ... | 2 | 15 | 2 | 1 | | |
| Frick, | do. | do. | ... | ... | ... | ... | 38 | . | 30 | 68 | 5 | 2 | ... | 48.600 |
| Fulton, | do. | do. | ... | .. | .. | .. | 90 | 10 | 18 | 118 | 7 | 2 | ... | 3,770 |
| Grassy Run, | Semi-bituminous, | do. | ... | .. | .. | . | 40 | 4 | 8 | 52 | 3 | ... | ... | 10,000 |
| Green Springs, | Bituminous, | do. | 1 | 1 | 35 | 2 | 100 | 6 | 24 | 130 | 10 | | | |
| Henry Clay, | do. | Slope, | 2 | 2 | 75 | 4 | 44 | . | 33 | 77 | 6 | 1 | . | 54 000 |
| Jefferson, | Semi-bituminous, | Drift, | 1 | 2 | 100 | 4 | 150 | 8 | 15 | 173 | 6 | 1 | ... | 4,800 |
| Lane, | do. | do. | .. | .. | | .. | 28 | 3 | 6 | 37 | 2 | 1 | .. | 5,699 |
| Leisenring, | Bituminous, | Shaft, | 2 | 1 | 250 | 4 | . | . | . | 48 | | | | |
| Leith, | do. | do. | 1 | 2 | . | 4 | 79 | 2 | 18 | 99 | 8 | 3 | ... | 10.500 |
| Lemont, | do. | Slope, | 2 | 1 | 30 | 3 | 29 | 1 | 6 | 36 | 4 | 1 | . | 20.573 |
| Little Pittsburgh, | do. | Drift, | .. | .. | .. | .. | 12 | 1 | 2 | 15 | 2 | .. | | 2,100 |
| Lower Road, | do. | do. | 2 | 2 | | . | 207 | 8 | 28 | 243 | 6 | 2 | 1 | 45 685 |
| Midway Block, | do. | do. | 3 | 2 | 26 | 2 | 67 | 9 | 10 | 86 | 6 | 1 | | |
| Morgan, | do. | do. | ... | .. | | . | 51 | . | 40 | 91 | 5 | 2 | .. | 81,000 |
| Morrell, | do. | Slope, | 2 | 1 | 120 | 4 | 123 | 11 | 71 | 205 | 19 | 2 | ... | 163 738 |
| Mount Braddock, | do. | do. | 3 | 2 | . | 4 | 37 | 2 | 15 | 54 | 4 | 2 | .. | 19,500 |
| Mount Equity, | Semi-bituminous, | Drift, | 2 | 1 | 16 | 1 | 56 | 1 | 21 | 78 | 14 | 2 | ... | 45 813 |
| Montour, | Bituminous, | do. | 1 | .. | .. | . | 220 | 24 | 16 | 260 | 10 | 2 | ... | 15,516 |
| New Eagle, | do. | do. | ... | .. | .. | . | 60 | 7 | 7 | 74 | 3 | 2 | | |
| Nixon, | do. | do. | ... | ... | .. | ... | 83 | 3 | 10 | 96 | 3 | 1 | .. | 5,900 |
| Oak Ridge, | do. | do. | ... | .. | . | .. | 81 | 5 | 14 | 100 | 7 | 1 | | |
| Painter, | do. | do. | .. | . | ... | .. | 65 | 1 | 13 | 79 | 9 | 8 | . | 16,000 |
| Phœnix, | do. | do. | 2 | .. | ... | .. | 49 | . | 7 | 56 | 3 | | .. | 14 262 |
| Pine Run, | do. | do. | 1 | 1 | | 1 | 193 | 16 | 24 | 233 | 9 | 2 | 1 | 44 029 |
| Pittsburgh and Connellsville Gas Coal Company, | do. | Shaft and slope, | 6 | 4 | . | 7 | 96 | .. | 129 | 225 | 5 | 5 | ... | 43 000 |
| Pittsburgh Union, | do. | Drift, | .. | | .. | .. | 43 | 4 | 5 | 52 | 2 | 1 | .. | 20 533 |
| Salisbury. | do. | do. | ... | ... | .. | ... | 26 | 2 | 4 | 32 | 2 | . | ... | 5.500 |
| Six Mile Ferry, No. 1, | do. | do. | .. | | . | . | 63 | 1 | 16 | 80 | 3 | 2 | | 7,388 |
| Six Mile Ferry, No. 2, | do. | do. | | 1 | 12 | . | 116 | . | 20 | 136 | 7 | . | 1 | 11,769 |
| Sterling, | do. | do. | 1 | 2 | | 2 | 131 | 10 | 140 | 281 | 23 | 11 | .. | 41 450 |
| Stewart Iron Company, | Coking, | Slope, | 2 | 1 | 100 | 2 | 21 | | 5 | 26 | 2 | .. | ... | 7,853 |
| Stockdale, | Bituminous, | Drift, | ... | 1 | ... | ... | 80 | 3 | 11 | 94 | 6 | .. | ... | 2,300 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Street's Run, | do. | do. | 1 | 1 | 40 | 2 | 116 | 15 | 15 | 146 | 8 | 4 | | 13.182 |
| Summer Hill, | do. | do. | | | | | 88 | 7 | 13 | 108 | 5 | | | 7 437 |
| Summit, | do. | do. | | | | | 38 | | 34 | 72 | 5 | 3 | | 67 500 |
| Tip-Top, | do. | do. | | | | | 20 | | 15 | 35 | 5 | 1 | | 31.500 |
| Trotter, | do. | Shaft, | 2 | 3 | 160 | 6 | 69 | 4 | 9 | 82 | 6 | 4 | | 78 994 |
| Tyrone, | do. | Drift, | | | | | 33 | 4 | 4 | 41 | 7 | 1 | | 18,060 |
| Umpire, | do. | do. | | | | | 79 | 10 | 11 | 100 | 5 | 2 | | 39 182 |
| Upper Road, | do. | do. | | 2 | | | 173 | 6 | 29 | 208 | 11 | 1 | | 26.724 |
| Valley, | do. | do. | 2 | 2 | | 3 | 51 | | 46 | 97 | 13 | 5 | | 72.900 |
| Warne's, | do. | do. | 1 | 1 | 30 | 1 | 88 | 6 | 7 | 101 | 3 | 1 | | 4 957 |
| Wheeler, | do. | Slope, | 2 | 1 | 60 | 2 | 31 | 4 | 16 | 51 | 3 | 4 | | 47 367 |
| White's, | do. | Drift, | | | | | 65 | | 75 | 140 | 5 | 2 | | 72,000 |
| Wood's Run, | do. | do. | | | | | 45 | 1 | 3 | 49 | 2 | 2 | | 2,200 |
| Youngstown, | do. | Slope, | 4 | 2 | 86 | 5 | 71 | 4 | 9 | 84 | 7 | 5 | | 62,475 |

## TABLE IV.—*Showing an average monthly statement of the ventilation of the respective collieries in the First Bituminous Mine District, during the year 1882.*

| NAME OF COLLIERY. | JANUARY. | | | | | | FEBRUARY. | | | | | | MARCH. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Allequippa, | | | | | | 16,500 | | | | | . . | 17,925 | | | | | | 16,500 |
| Amity, | 285 | 13,600 | 200 | 7,600 | 240 | 11,220 | 400 | 16,080 | 140 | 10,080 | 260 | 14 560 | 319 | 15,669 | 300 | 10,400 | 450 | 17,300 |
| Camden, | | | | | | | | 17.000 | | 15.000 | | 19 300 | | | | | | |
| Camp Hill, | 500 | 14 786 | 250 | 9.236 | 400 | 19,300 | 250 | 9,200 | 300 | 10,100 | 350 | 15,000 | 550 | 16,900 | 500 | 16,500 | 400 | 17,500 |
| Carondelet, | 130 | 6.370 | 140 | 5 040 | 160 | 10,240 | | | | | | | | | | | | |
| Castle Shannon, | 200 | 7.000 | 100 | 3 500 | 200 | 7.000 | | | | | | | | | | | | |
| Cliff. | | 14 960 | | 12 960 | | 21.955 | | | | | | | | | | | | |
| Clinton, | 202 | 11 312 | 196 | 10.976 | 205 | 11.480 | 222 | 12,432 | 202 | 12 212 | 222 | 12.432 | | | | | | |
| Cunard, | 300 | 15 000 | 240 | 7 200 | 400 | 12,000 | 300 | 15.000 | 240 | 7,200 | 400 | 12,000 | 200 | 6 000 | 130 | 3,120 | 200 | 6,000 |
| Diamond, | 320 | 16 000 | | 12,000 | | | 190 | 9.500 | | | | | | 11,000 | | | | |
| Eagle, | 348 | 12.876 | 10 | 480 | 280 | 11 760 | 230 | 9.660 | 15 | 750 | 320 | 11,520 | 320 | 12,320 | 85 | 4,080 | 215 | 9,030 |
| Enterprise, | 300 | 6 000 | . . . | . . | | | 300 | 6 000 | | | | | | | | | | |
| Excelsior, | | | | | | | 100 | 4.200 | . . . | 2.840 | . . . | 7,600 | | | | | | |
| Fairchance, | 209 | 11,704 | 60 | 3,360 | 180 | 2,700 | 209 | 11,700 | 120 | 7,320 | 95 | 1,425 | | | | | | |
| Fair Haven, | . . . | | | . . | | | | . . | | | | | 200 | 8,400 | 50 | 1.750 | 300 | 10,500 |
| Foundry, | 70 | 2.940 | 30 | 1,440 | 145 | 4.132 | 70 | 2.940 | 35 | 1,470 | 220 | 6.600 | 110 | 4,620 | 27 | 1,134 | 205 | 6,150 |
| Franklin, | 113 | 6 328 | 95 | 5,320 | 145 | 6 090 | 200 | 11,200 | 182 | 10,192 | 248 | 10.466 | | | | | | |
| Frick, | 210 | 8 820 | 20 | 1,040 | 315 | 15,120 | 150 | 6 300 | 25 | 1,300 | 260 | 12 480 | 158 | 6,636 | 51 | 2 652 | 232 | 11 184 |
| Green Springs, | . . . | | | | | | 266 | 14,940 | . . | | 274 | 15 112 | | | | | | |
| Henry Clay, | 50 | 2,400 | 15 | 840 | 40 | 1,440 | 115 | 5,520 | 45 | 2 523 | 150 | 3 437 | 203 | 9,779 | 22 | 1,232 | 291 | 10,709 |
| Jefferson, | . . . | . . . . | | | | | | 13.300 | . . . | 11.350 | | 12,500 | | | | | | |
| Lane, | 230 | 9 430 | 200 | 9.000 | 225 | 11.375 | 360 | 14,760 | 320 | 11,200 | 380 | 13,300 | | | | | | |
| Leisenring, | 250 | 12.880 | 170 | 9.520 | 220 | 12,320 | | | | | | | | | | | | |
| Leith, | 260 | 12 740 | 200 | 12.800 | 275 | 17.600 | | 11.520 | 270 | 14,040 | 240 | 11,520 | | | | | | |
| Midway Block, | 300 | 9,480 | 240 | 7.200 | 300 | 9.480 | 300 | 9,480 | 240 | 7.200 | 300 | 9.480 | 300 | 9,480 | 240 | 7,200 | 300 | 9.480 |
| Morgan, | 315 | 15,120 | 25 | 1 200 | 348 | 12,876 | 260 | 12.480 | 30 | 1,440 | 330 | 12 751 | 240 | 11,520 | 40 | 1,920 | 282 | 10 896 |
| Morrell, | 300 | 30,000 | 60 | 3.840 | 285 | 29 125 | 250 | 25 000 | 45 | 2 880 | 240 | 25 200 | 440 | 44,000 | 58 | 3,712 | 420 | 44 100 |
| Mt. Braddock, | 175 | 4.400 | 110 | 8,800 | 300 | 19 200 | 150 | 3,750 | 100 | 8,000 | 300 | 19,200 | 150 | 3 750 | 120 | 9,200 | 300 | 19,200 |
| Mt. Equity, | 400 | 10,000 | . . | . . . | 460 | 10,400 | 375 | 9,374 | . . . | . . | 240 | 9,600 | 400 | 10,000 | . | . | 260 | 10,400 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nixon, | 220 | 12 251 | 110 | 5,280 | 300 | 16,246 | | | | | | | | | | | | |
| Oak Ridge, | 220 | 7,920 | 200 | 7,140 | 400 | 16,000 | 229 | 8 869 | 210 | 7,560 | 385 | 15 400 | 156 | 9,863 | 162 | 5,832 | 290 | 11,600 |
| Painter, | . . . | | | | | | 300 | 14 700 | 100 | 4 110 | 210 | 10,290 | | | | | | |
| Pittsburgh and Connellsville Gas Coal and Coke Co., | 500 | 33.600 | 380 | 26,150 | 380 | 26.350 | 258 | 20 252 | 170 | 13,140 | 170 | 13,114 | 300 | 21,184 | 120 | 10,010 | 120 | 10,010 |
| Pittsburgh Union, | 90 | 3,150 | . | | 110 | 3,850 | 90 | 3 150 | | | 100 | 3.500 | 86 | 3 010 | . . | | 402 | 3,570 |
| Sterling, | 190 | 10,800 | 80 | 3 360 | 155 | 7,440 | 200 | 11,200 | 40 | 1,680 | 185 | 8,880 | | | | | | |
| Street's Run, | . . . | | 296 | 10,360 | 408 | 17.136 | | | 360 | 11,410 | 416 | 17,472 | . | . . . | 286 | 10,010 | 398 | 16,716 |
| Stockdale, | . . . | | . | | . | | . . | 20,000 | | | | | | | | | | |
| Summer Hill, | 280 | 11.760 | 220 | 9,240 | 280 | 11,760 | 210 | 8 820 | 190 | 7.980 | 300 | 12,600 | | | | | | |
| Summit, | 80 | 3 840 | 15 | 780 | 100 | 4,500 | 130 | 7,800 | 20 | 1,056 | 150 | 7,980 | 164 | 7,872 | 22 | 1,144 | 110 | 5,852 |
| Tip Top, | 35 | 1 820 | 10 | 480 | 25 | 1 200 | 35 | 4 972 | 20 | 969 | 140 | 6,720 | 135 | 7.879 | 27 | 1.296 | 35 | 1,880 |
| Tyrone, | 170 | 8,840 | 100 | 5,600 | 160 | 8,840 | 210 | 10,920 | 210 | 10,920 | 200 | 11 200 | 220 | 11 410 | 200 | 11 200 | 200 | 11,200 |
| Umpire, | 235 | 12.515 | 235 | 12,515 | 235 | 12,337 | 350 | 17,150 | 350 | 17,150 | 350 | 17.150 | 350 | 17,150 | 350 | 18 375 | 350 | 18,375 |
| Valley, | 300 | 14,400 | 200 | 9.600 | 480 | 18,240 | 325 | 17,956 | 100 | 4,800 | 500 | 19.200 | 426 | 23,536 | 82 | 3 936 | 633 | 24 307 |
| Wheeler, | 130 | 7 280 | 36 | 2,204 | 115 | 7,360 | 133 | 7,448 | 58 | 2,432 | 115 | 7 360 | 140 | 7,840 | 43 | 2,752 | 122 | 7.808 |
| Whites', | 150 | 7.800 | 30 | 1,440 | 320 | 10 240 | 150 | 7.800 | 35 | 1 680 | 270 | 8,640 | 130 | 6,760 | 15 | 720 | 260 | 8 320 |
| Youngstown, | 115 | 12,750 | 300 | 16,806 | 760 | 48,900 | 1,160 | 121,800 | 350 | 19,600 | 1,270 | 121,920 | 625 | 65,620 | 350 | 19 600 | 1,360 | 130,560 |

## TABLE IV.--VENTILATION OF COLLIERIES—*Continued.*

| NAME OF COLLIERY. | APRIL. | | | | | | MAY. | | | | | | JUNE. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Abe Hays, | . . | | . . | | | | 350 | 13 475 | 330 | 12,750 | 350 | 13 475 | 260 | 10,010 | 240 | 9 260 | 260 | 10 010 |
| Allequippa, | 375 | 15.800 | | . | 400 | 16 000 | | | 400 | 16,000 | 400 | 16,000 | | | | | | |
| Amity, | 380 | 15,980 | 300 | 11 500 | 320 | 15,440 | 340 | 14,930 | 410 | 15,350 | 520 | 21 840 | 290 | 16 240 | 240 | 10,180 | 370 | 16,760 |
| Banner, | . . . | . . . . | . | | . . . | | | . | | | | | 390 | 16,380 | 280 | 12,320 | 500 | 20,000 |
| Black Diamond, | . . . | 14 250 | | . . | . . | 11 760 | | | | | | | | | | | | |
| Carondelet, | . . . | . . | | . | | | 120 | 5,880 | 140 | 5,040 | 180 | 9,120 | 130 | 6,890 | 150 | 5,860 | 140 | 8,960 |
| Courtney, | | | | | | | | | | | | | 260 | 7,800 | | | | |
| Eagle, | 580 | 22,411 | 850 | 4,080 | 160 | 6,720 | 160 | 6,160 | 40 | 1,920 | 140 | 5 880 | 185 | 7,122 | 50 | 2,400 | 160 | 6,720 |
| Enterprise, | . | | | | | | 200 | 7.200 | | | | | | | | | | |
| Foundry, | 40 | 3.780 | 40 | 1 680 | 250 | 7,500 | 80 | 3,360 | 40 | 1 680 | 120 | 3,600 | 70 | 2,940 | 35 | 1,470 | 180 | 5 400 |
| Frick, | 210 | 8 820 | 30 | 1.560 | 180 | 8 640 | 110 | 4 620 | 20 | 1 040 | 80 | 3,840 | 100 | 4,200 | 15 | 780 | 90 | 3.240 |
| Henry Clay, | 175 | 8,400 | 350 | 1,960 | 330 | 11 880 | 110 | 5 280 | 20 | 1,120 | 140 | 5,040 | 140 | 6,720 | 20 | 1 120 | 90 | 3 240 |
| Lane, | . . | | . | | | | | | | | | | 240 | 9 840 | 190 | 7 980 | 280 | 9 800 |
| Leith, | | | | | | | | | | | | | 270 | 11,340 | 148 | 8 880 | 160 | 9,280 |
| Morgan, | 230 | 11,040 | 350 | 1,680 | 190 | 9 120 | 150 | 7,200 | 25 | 1 200 | 160 | 6,160 | 70 | 3 360 | 20 | 960 | 85 | 4,048 |
| Morrell. | | | | | | | 390 | 39.000 | 50 | 3 200 | 372 | 39 060 | | | | | | |
| Mt. Equity, | 500 | 12,500 | 450 | 11,250 | 460 | 11,500 | 350 | 8 700 | | . . . | 250 | 1,000 | | | | | | |
| Phœnix, | . . | | | | | | 18¾ | 1,304 | . | . | | | 18¾ | 1 304 | | | | |
| Pittsburgh Union, | : . . | | | | | | 90 | 3 150 | | | 90 | 3 150 | | | | | | |
| Summit, | 200 | 9,600 | 26 | 1.373 | 180 | 9,576 | 135 | 6 480 | 20 | 1,040 | 160 | 5.250 | 100 | 4,800 | 15 | 780 | 00 | 4 725 |
| Tip Top, | 60 | 3 510 | 10 | 480 | 190 | 9,120 | 80 | 4,680 | 15 | 720 | 95 | 4,560 | 100 | 5 850 | 20 | 960 | 120 | 5 760 |
| Trotter, | . . . | . | | . | | | | | | | | | 214 | 12.840 | 123 | 13 350 | 280 | 11,500 |
| Umpire, | | | | | . . | | 300 | 15,750 | 300 | 14,700 | 360 | 18 900 | 250 | 13 125 | | | | |
| Valley, | 300 | 16,557 | 70 | 3,360 | 580 | 22 272 | 500 | 16 800 | 60 | 2.880 | 400 | 15 600 | 280 | 15,680 | 55 | 2 640 | 400 | 15,600 |
| Wheeler, | | | | | | | 143 | 1,848 | 35 | 2.240 | 125 | 8 000 | | | | | | |
| White's, | 120 | 6,240 | 250 | 1 200 | 325 | 10,460 | 165 | 8,580 | 35 | 1,680 | 330 | 10,560 | 80 | 4,160 | 20 | 960 | 85 | 3,372 |

## TABLE IV.—VENTILATION OF COLLIERIES.—*Continued.*

| NAME OF COLLIERY. | JULY. | | | | | | AUGUST. | | | | | | SEPTEMBER. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Abe Hays, | 260 | 10,010 | 240 | 9,240 | 290 | 11,165 | 300 | 11,550 | 250 | 10,780 | 300 | 11 550 | 260 | 10,010 | 240 | 9,240 | 260 | 10,010 |
| Amity, | | | . | . | | . . | | . . . . | | . . . . | . | . . . | 244 | 13,664 | 300 | 12,660 | 420 | 16 000 |
| Carondelet, | 125 | 6,125 | 135 | 4 860 | 145 | 9.280 | | | | | | | | | | | | |
| Castle Shannon, | | | 100 | 3.500 | 200 | 8.400 | | | | | | | | | | | | |
| Courtney, | 260 | 12,000 | 140 | 3,840 | 140 | 3,800 | | | | | | | | | | | | |
| Cunard, | | | . . . | | | . . | 260 | 6,500 | 90 | 3,600 | 800 | 7 600 | 220 | 3,520 | 80 | 1,920 | 150 | 4,500 |
| Deval, | | | 40 | 1,400 | | | | | | | | | | | | | | |
| Eagle, | 185 | 7,122 | 50 | 2 400 | 160 | 6,720 | | . . . | | . . | | . | 100 | 4 200 | 25 | 1,200 | 120 | 4 620 |
| Enterprise, | | | . | | | | 175 | 3,500 | 200 | 4,000 | 250 | 5,000 | | | | | | |
| Foundry, | 75 | 3 150 | 35 | 1,470 | 200 | 6.000 | . . | . . . . | . . | . . . | . . | . . . | 320 | 17 280 | 60 | 2,520 | 130 | 5 460 |
| Frick, | 100 | 4,200 | 15 | 780 | 85 | 4 080 | . . | . | . | . . . | . . | . . . | 140 | 6,720 | 20 | 1 040 | 165 | 6 930 |
| Grassy Run, | | | . | | | | . | 20,000 | | | | | | | | | | |
| Henry Clay, | 140 | 6 720 | 26 | 1,120 | 90 | 3.240 | . | . . . | . | . . | . | . . | 130 | 4,680 | 15 | 840 | 100 | 4 800 |
| Morgan, | 70 | 3 360 | 20 | 960 | 85 | 3 272 | | | | | | | 170 | 6 544 | 40 | 1.920 | 140 | 6 720 |
| Morrell, | 270 | 27,000 | 45 | 2,880 | 253 | 26.565 | 315 | 31 500 | 52 | 3,328 | 301 | 31,605 | 355 | 35,000 | 68 | 4,352 | 340 | 35 700 |
| Mt. Equity, | 500 | 12.571 | | | 300 | 12 000 | | | | | | | | | | | | |
| Phœnix, | 18¾ | 1.304 | . . . | . . . | | | . . | . . . . | . | . . . | . . . | . . . | 18¾ | 1,304 | | | | |
| Pittsburgh Union, | 100 | 3.500 | . | . . | 80 | 2,800 | | | | | | | | | | | | |
| Salisbury, | | 7.800 | | | | | | | | | | | | | | | | |
| Stewart Iron Company, | 140 | 12.600 | 130 | 6,240 | 135 | 9,450 | 122 | 10,980 | 130 | 6,240 | 125 | 8,750 | | | | | | |
| Summit, | 180 | 8 640 | 20 | 1,040 | 160 | 8 400 | | . . . . | . . . | . | . . | . . . | 120 | 6.300 | 15 | 780 | 135 | 6 480 |
| Tip-Top, | 115 | 6 727 | 20 | 960 | 130 | 6 240 | | | | | | | 100 | 4 800 | 15 | 720 | 85 | 4 973 |
| Trotter, | 210 | 11.970 | 150 | 9,950 | 220 | 11 440 | 230 | 13,800 | 160 | 9 600 | 270 | 1,350 | 250 | 15 000 | 250 | 14 500 | 260 | 13.000 |
| Umpire, | | | | | | | | | | . . . | | . | 260 | 12 720 | | | 270 | 13 230 |
| Valley, | 270 | 15.120 | 50 | 2.400 | 380 | 14 820 | | | | | | | 355 | 13 845 | 50 | 2.400 | 270 | 15.120 |
| Wheeler, | 145 | 8,120 | 37 | 2,368 | 124 | 7 936 | 141 | 7,896 | 32 | 2,048 | 122 | 7,808 | 147 | 8 323 | 33 | 2 304 | 130 | 8 320 |
| White's, | 300 | -15,600 | 30 | 1,440 | 460 | 14 720 | | | | | | | 350 | 11.200 | 25 | 1.200 | 230 | 11 960 |
| Youngstown, | . . | . . . . | . | | | | 700 | 78,400 | 250 | 1,400 | 750 | 7,840 | 850 | 41,650 | 320 | 17,920 | 870 | 90 480 |

## TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

| Name of Colliery. | October. |  |  |  |  |  | November. |  |  |  |  |  | December. |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Abe Hayes, | 290 | 11 165 | 260 | 10,010 | 290 | 11 165 |  |  |  |  |  |  |  |  |  |  |  |  |
| Amity, | 290 | 16,240 | 350 | 14,550 | 450 | 18,550 | 300 | 16 800 | 340 | 13,600 | 520 | 18,860 |  |  |  |  |  |  |
| Camp Hill, |  |  |  |  |  |  | 300 | 7,944 |  |  |  |  |  |  |  |  |  |  |
| Carondelet, | 140 | 68,600 | 160 | 5,760 | 185 | 11,840 |  |  |  |  |  |  | 120 | 6 880 | 130 | 5,680 | 130 | 8,320 |
| Clinton, |  |  |  |  |  |  | 208 | 11 645 | 205 | 11,480 | 240 | 13,440 |  |  |  |  |  |  |
| Cunard, | 200 | 6 000 | 130 | 3,120 | 200 | 6 000 |  |  |  |  |  |  |  |  |  |  |  |  |
| Deer Park, | 300 | 16,800 |  |  | 550 | 29,700 |  |  |  |  |  |  | 400 | 22,400 |  |  | 700 | 39 700 |
| Eagle, |  |  |  |  |  |  |  |  |  |  |  |  | 380 | 14 683 | 100 | 4.800 | 340 | 14.280 |
| Foundry, |  |  |  |  |  |  |  |  |  |  |  |  | 430 | 18,060 | 100 | 4.200 | 320 | 17,289 |
| Franklin, |  |  |  |  |  |  | 176 | 10,856 | 115 | 6,440 | 185 | 10 360 |  |  |  |  |  |  |
| Frick, |  |  |  |  |  |  |  |  |  |  |  |  | 250 | 10 500 | 40 | 2 080 | 200 | 9.600 |
| Henry Clay, |  |  |  |  |  |  |  |  |  |  |  |  | 250 | 12.000 | 40 | 2 240 | 380 | 13 680 |
| Lemont, |  |  |  |  |  |  | 250 | 16,224 | 120 | 1,280 | 750 | 67.552 | 255 | 14 560 | 120 | 7.280 | 750 | 47.552 |
| Midway Block, |  |  |  |  |  |  |  |  |  |  |  |  | 225 | 8 100 | 120 | 4.200 | 225 | 8.100 |
| Morgan, |  |  |  |  |  |  |  |  |  |  |  |  | 280 | 13 440 | 45 | 2,160 | 320 | 12 320 |
| Morrell, | 398 | 39 800 | 74 | 4,736 | 380 | 39,900 | 456 | 45 600 | 75 | 4,800 | 432 | 45 360 | 524 | 52,400 | 85 | 5,440 | 500 | 52.500 |
| Mt. Equity, | 450 | 11,250 |  |  | 311 | 12,400 | 600 | 15,000 |  |  | 390 | 15,600 | 630 | 15.750 |  |  | 350 | 15,750 |
| Nixon, |  |  |  |  |  |  |  |  |  |  |  |  | 250 | 10 500 | 200 | 8 800 | 250 | 11.000 |
| Oak Ridge, | 96 | 4 800 | 135 | 4 860 | 372 | 14,880 | 110 | 5,280 | 185 | 6,475 | 402 | 17,280 | 185 | 6,475 | 120 | 4 320 | 480 | 19 200 |
| Pittsburgh Union, |  |  |  |  |  |  |  |  |  |  |  |  | 96 | 3 150 |  |  | 100 | 3 500 |
| Summit, |  |  |  |  |  |  |  |  |  |  |  |  | 300 | 14,400 | 100 | 5,720 | 640 | 40,960 |
| Tip-Top, |  |  |  |  |  |  |  |  |  |  |  |  | 190 | 11 115 | 35 | 1.680 | 210 | 10.080 |
| Trotter, | 210 | 11.970 | 150 | 9.950 | 220 | 11.440 | 260 | 15 600 | 260 | 13.000 | 270 | 13 500 | 240 | 14,400 | 255 | 12,750 | 235 | 14,000 |
| Umpire, | 335 | 17,297 | 353 | 17,297 | 353 | 17 297 | 355 | 17,394 | 355 | 18,637 | 355 | 18,637 |  |  |  |  |  |  |
| Valley, |  |  |  |  |  |  |  |  |  |  |  |  | 200 | 11.050 | 35 | 1,680 | 300 | 10 752 |
| Wheeler, | 120 | 6 720 | 51 | 3 364 | 107 | 6,848 | 120 | 6 720 | 54 | 3,456 | 106 | 6,784 | 137 | 7 672 | 55 | 3.520 | 120 | 7 680 |
| White's, |  |  |  |  |  |  |  |  |  |  |  |  | 150 | 7,800 | 35 | 1,440 | 500 | 16,000 |

## LIST OF ACCIDENTS *occurring in the mines of the First Bituminous Coal District of Pennsylvania, for the year ended December 31, 1882.*

| Date of accident. | NAME OF PERSON INJURED. | Age. | Married or single. | Number of orphans. | Name of Colliery. | Location—County. | Date of Investigation. | Nature and Cause of Accident. |
|---|---|---|---|---|---|---|---|---|
| Jan. 3 | Thomas Kunkle, | 12 | | | Six Mile Ferry, No. 2, | Allegheny, | Jan. 4 | He had gone in the mine with his father to see the workings, and had been there but a few minutes when he was killed by a fall of roof in the room where his father was working. |
| 5 | Daniel Hage, | 26 | Married, | | Umpire, | Fayette, | | Injured slightly by mule. |
| 13 | Adams Speers, | | | | | | | Injured by fall of coal. |
| 17 | Harry Jones, | 17 | Single, | | Cliff, | Washington, | | Foot injured by wagon. |
| 18 | Lewis Meyers, | 20 | Single, | | Amity, | Allegheny, | | He had gone into the mine to solicit charity from the miners for a blind man in his charge, and while talking to one of them in the room the slate fell upon him, resulting fatally. |
| 21 | William Hough, | 20 | Single, | | Bargeddie, | Fayette, | Jan. 23 | Was killed by a fall of slate. |
| Feb. 9 | John Lewis, | 26 | Married, | 3 | Enterprise, | Allegheny, | | He was fatally injured by wagons. |
| 21 | William Richards, | 56 | Married, | | Amity, | Allegheny, | | Injured by wagons. |
| 28 | Hugh McCombes, | 40 | Single, | | Allequippa, | Allegheny, | | Slightly injured by fall of slate. |
| Mar. 1 | James Stevenson, | 61 | Married, | 9 | Turnbull's, | Fayette, | Mar. 2 | They (father and son) had removed the props from under the slate in order to take it down, when a part of it fell and in attempting to remove the same were caught under a heavy fall, and instantly killed. |
| 1 | Richard Stevenson, | 18 | Single, | | Turnbull's, | Fayette, | Mar. 2 | |
| 4 | William Jones, | 28 | Single, | | Fulton, | Allegheny, | Mar. 9 | He was removing timber, when a large fall caught him, resulting in his death a few hours later. |
| 9 | Joseph Kotze, | 39 | Married, | | Grant, | Allegheny, | Mar. 16 | Seriously injured by a fall of slate. |
| 10 | Lorens Bernhard, | 32 | Married, | | Oak Ridge, | Allegheny, | | Leg broken by fall of slate. |
| 15 | John Watson, | 26 | Married, | | Mount Equity, | Bedford, | | Leg broken by fall of coal. |
| 17 | Jonathan Bronson, | 40 | Married, | | Alps, | Fayette, | | Injured by fall of slate. |
| April 10 | Solomon Cadman, | 25 | Married, | 3 | Jones, | Allegheny, | Apr. 11 | He was engaged removing posts from an old room, and when knocking one out the upper slate fell, injuring him fatally. |
| 13 | Robert Stinson, | 14 | Single, | | Allequippa, | Allegheny, | Apr. 15 | He was run over by coal cars, and fatally injured. |
| 19 | Thomas Massey, | 19 | Single, | | Catsburg, | Washington, | Apr. 19 | Killed by fall of slate. |
| 28 | John Patterson, | | | | | | | Arm and some ribs broken by a mine car. |
| May 1 | Christ. Kindler, | 20 | Single, | | Foundry, | Fayette, | May 4 | Killed by a fall of roof. |
| 5 | Louis Betterler, | 20 | Single, | | | | May 8 | Killed by a fall of coal and slate. |
| 8 | F. Earkin, | 37 | Married, | 3 | Lower Road, | Allegheny, | May 9 | Killed by fall of horse-back. |
| 8 | O. Harding, | 45 | Married, | 5 | | | May 11 | Killed by coal from a shot in the next room. |

## LIST OF ACCIDENTS—Continued.

| Date of accident. | | NAME OF PERSON INJURED. | Age. | Married or single. | Number of orphans. | Name of Colliery. | Location—County. | Date of investigation. | Nature and Cause of Accident. |
|---|---|---|---|---|---|---|---|---|---|
| May | 11 | John Karns, | 39 | Single, | | Banner, | Washington, | May 13 | Killed by fall of slate. |
| | 17 | William Britton. | | | | Montour, | Allegheny, | | Leg fractured. |
| | 20 | William Phillips, | | | | Montour, | Allegheny, | | Foot slightly bruised. |
| | 26 | Dennis White, | | | | Lower Road, | Allegheny, | | Head slightly injured, and toes crushed. |
| June | 7 | Joseph Clark, | 21 | | | | | | Slightly injured by wagons. |
| | 14 | Isaac Lee, | 38 | Single, | | Trotter, | Fayette, | June 16 | Fatally burned by explosive gas. |
| | 14 | William Shields, | 36 | Single, | | Trotter, | Fayette, | June 16 | |
| | 14 | William Natross, | 26 | Single, | | Trotter, | Fayette, | June 16 | |
| | 21 | Thomas Wilkinson, | 27 | Married, | | Buffalo, | Washington, | | Burned by explosive gas. |
| | 21 | W. H. Jackson, | 29 | Married, | | Buffalo, | Washington, | | |
| | 21 | George Luchm, | 26 | Single, | | Courtney, | Washington, | | Seriously injured by fall of slate. |
| | 23 | William Lorson, | 30 | | | | Allegheny, | | Injured by fall of slate. |
| | 9 | Paul Carson, | 25 | | | Upper Road, | Allegheny, | | Killed by coal train. |
| | — | M. Markey, | 28 | | | Leith, | Fayette, | | Burned by explosive gas. |
| | — | John Martus, | 25 | | | Leith, | Fayette, | | |
| July | 1 | William Galloway, | 37 | Married, | 2 | Courtney, | Washington, | July 1 | Fatally burned by explosive gas. |
| | 1 | Daniel Campbell, | 39 | Single, | | Courtney, | Washington, | July 1 | Seriously burned by explosive gas. |
| | 24 | John Cooper, | | Single, | | Phœnix, | Allegheny, | | Thighs injured by falling slate. |
| | 28 | Lawrence Snyder, | 31 | Married, | 5 | Keeling's, | Allegheny, | July 30 | These men were clearing out a large fall in an air-course, where a large quantity of fire-damp had collected, which ignited from their lamps, burning them fatally. |
| | 28 | Nicholas Flause, | 30 | Married, | 4 | Keeling's, | Allegheny, | July 30 | |
| Sept. | 5 | David Morris, | 60 | Single, | | Warne's, | Washington, | | Injured by fall of slate. |
| | 25 | John Sullivan, | 14 | Single, | | Warne's, | Washington, | | Foot injured by wagons. |
| | 28 | George Shouts, | 41 | Married, | 5 | Caledonia, | Washington, | Sep. 30 | Killed by a fall of top-rock, while posting in main entry. |
| Oct. | 6 | Walter Hallet, | 6 | | | Lower Road, | Allegheny, | | Hand cut off while gathering coal. |
| | 8 | Joel Ashton, | 36 | Married, | | Morrell Slope, | Fayette, | | Two ribs broken, by being caught between cars. |
| | 27 | James M. Decker, | 30 | Single, | | Pine Run, | Allegheny, | Oct. 28 | Killed by a fall of slate. |
| | — | Michael Wieland, | | Single, | | Frick, | Fayette, | | Killed by a fall of horse-back. |
| Nov | 24 | Gottlieb Cook, | 38 | Married, | | Amity, | Allegheny, | Nov. 28 | Killed by a fall of slate. |
| Dec. | 21 | Samuel Hawk, | 48 | Married, | 6 | Pine Run, | Allegheny, | Dec. 26 | Killed by a fall of slate. |

# SECOND DISTRICT.

To the Honorable A. K. Dunkel, *Secretary of Internal Affairs of the Commonwealth of Pennsylvania:*

Sir: I have the honor of submitting to you my annual report as inspector of mines for the Second Bituminous Coal District, for the year ended December 31, 1882.

In the report will be found a list of accidents as reported from the different mines during the year, with my investigations, and in some of the fatal cases, the conclusions arrived at by the jury at the coroners' inquests.

It will be seen that the total number injured, including fatal and non-fatal accidents were ninety, of which thirty-four were fatal or proving fatal soon after they occurred.

Of the whole number reported there were thirty-one injured by falls of slate and roof; twenty by falls of coal; ten by explosion of gas; eighteen by cars and machinery, and eleven by miscellaneous causes.

I am sorry to state that the number of fatal accidents has been increased in 1882 to double the number reported in 1881, while the total number injured only shows an increase of eighteen over that reported in 1881.

Of the fatal accidents sixteen came to their deaths by falls of slate and roof; three by falls of coal; one by an explosion of gas; ten by cars and machinery, and four by miscellaneous causes.

From the above we find that the number of deaths resulting from the different causes named, give the following percentage of each class of accidents to the whole number of deaths:

| | |
|---|---|
| Falls of slate and roof, | $.47\frac{1}{17}$ |
| Falls of coal, | $.08\frac{14}{17}$ |
| Explosion of gas, | $.02\frac{16}{17}$ |
| Cars and machinery, | $.29\frac{7}{17}$ |
| Miscellaneous causes, | $.11\frac{13}{17}$ |

During the year 1882 there have been several new mines opened in this district and others in course of opening. There are also a few mines that have been exhausted, and a number of others that have not been in operation.

In comparing the figures furnished by several of the mines for the year 1882, with those furnished by the same for the year 1881, I find a large increase in the output of coal from many of them. While there are others in the district that supplied mills and furnaces with coal, that owing to the long-continued strike of last summer have failed to come up to their totals for 1881.

Out of forty-seven mines compared, sixteen, taken collectively, show a de-crease in their production of 86,823 tons; the remaining thirty-one show an increased production over 1881 of 651,033 tons.

In reply to the circulars issued for statistics from the mines, showing the number of tons mined, the number of persons employed, number of days worked, &c., some returned the same with the production omitted, and the most important information left out. The object for which these circulars are issued is entirely lost sight of. It would be of more service, if the circulars were returned giving the actual out-put of the several districts, and not the estimated production.

In computing the figures received from sixty mines that were properly reported, they show a total production of 4,175,760 tons of coal; total number of persons employed inside, 6,130; total number employed outside, 1,680; total employed inside and outside, 7,800.

There are in this district 130 mines, employing over 10 persons each. Deducting the number of mines not running, and allowing a deduction for the new mines not in operation, but for a short period, we would have 105 in operation.

The following is estimated—

| | |
|---|---|
| Total number of tons mined (in the district), . . . . . | 7,307,580 |
| Average output per mine, . . . . . . . . . . . . . . . . . | 69,596 |
| Increase over 1881, . . . . . . . . . . . . . . . . | 824,380 |
| Average number of persons employed inside, . . . . . . | 10,710 |
| Average number of persons employed outside, . . . . . . | 2,940 |
| Total number of persons employed, . . . . . . . . . | 13,650 |
| Total number of tons mined for each fatal accident, . . . . | $214,928\frac{14}{17}$ |
| Average number of tons mined for each casualty, . . . . . | $81,195\frac{1}{3}$ |
| Number of persons employed to each casualty, . . . . . | $151\frac{2}{3}$ |
| Average number of days worked in 1882, . . . . . . . . | 233 |

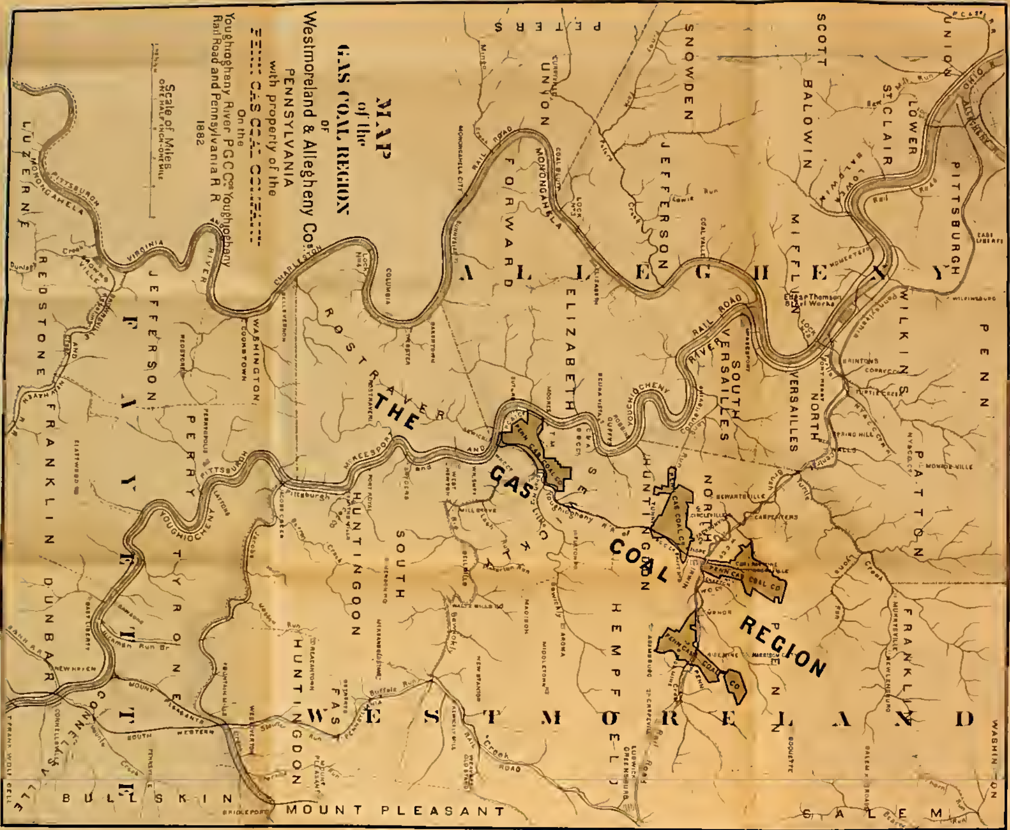
The general condition of the mines, on the whole, is improving, and efforts were made during the year to increase the ventilation, by building furnaces and erecting fans at many of the mines. Still, there are some mines in the district that need further improvements. As the mines are advancing their requirements change, and every effort should be made, by those in charge, to secure the safety and well-being of those in their employ, and, as they progress, provision should be made for that purpose.

In addition to the tables accompanying these reports, I have been furnished, by Lewis Stockett, engineer of the Westmoreland Coal Company, with the plan of the bottom at Westmoreland shaft, and by T. Frank Wolf, engineer at Penn Gas Coal Company's mines, with a map of the gas-coal region of Westmoreland and Allegheny counties, showing the property of the Penn Gas Coal Company, &c., which are sent with this report.

Yours, very respectfully,

J. J. DAVIS.

PITTSBURGH, *February 10th, 1883.*



MAP
of the
GAS COAL REGION
OF
Westmoreland & Allegheny Cos.
PENNSYLVANIA
with property of the
PENN GAS COAL COMPANY
On the
Youghiogheny River P G C Co's Youghiogheny
Rail Road and Pennsylvania R R
1882

### Penn Gas Coal Company Mines.

A description of these mines has been given in the report of 1881. The following map of the Gas Coal Region has been furnished by one of their engineers, showing the location of their mines.

## NEW MINES OPENED AND OPERATED IN 1882.

### M. M. & M. Mine.

This mine was commenced in the latter part of February, 1882. It is a drift opening located in Unity township, Westmoreland county at Mutual Station, Sewickley branch of S. W. P. R. R. Operated by the Mutual Mining and Manufacturing Company. Superintendent, Robert S. Jamison. Pit-boss, Israel Linsibigler. The entries are driven eight feet wide and about seven and a half feet high. The rooms are twenty-one feet wide with ribs ten feet wide between.

Gauge of pit track forty inches. Number of miners in October was fifty-five men and five boys. They had four mules employed inside and one outside. When I visited the works the ventilation was produced by natural means, and showed a velocity of air in mouth of main opening of one hundred and fifty feet per minute. Size of opening seven by seven and a half. The mine was in a fair condition. During the time they have been in operation they have built sixty coke ovens and have operated fifty since July, the other ten were added to the number in December. They have also built several houses and other buildings required at the works.

### Hecla Shaft.

Located at Hecla, Westmoreland county, on a branch of the S. W. P.R. R. Owned and operated by the Hecla Coke Company. Superintendent, G. C. Hewett. Pitt-boss, James R. Piersol. I was called to this mine in October on account of an accident that occurred resulting in the death of William Jones Davis, a carpenter, employed at the top of the shaft, falling from the top to the bottom. An account of which is given in the list of accidents accompanying this report. This mine at that time was in its infancy. The underground workings are but a short distance from the bottom of the shaft and but a few persons employed inside. The work confined to entry-driving for the time being.

This company during the year must have been at a large expense and I hope that the workings will prove profitable. At the time of my visit they were putting down another shaft for second opening. The hoisting shaft had been sunk to the depth of two hundred and fifteen feet.

They had built several dwelling houses, stable, and store, in addition to the buildings to house the machinery at the shaft. They have also completed three-fourths of a mile of railroad siding, and built one hundred and one coke ovens, which are in operation.

### United Mine.

This is a new mine, located in Mount Pleasant township, Westmoreland county, on a branch of the S. W. R. R.

Operated by the United Coal and Coke Company. Superintendent, R. A. Hope. Mining-boss, James Franklin. The mine is a shaft opening, two hundred and twenty-three feet deep from surface. The workings are only just opening. They intend to ventilate by fan, and contemplate erecting one twelve feet in diameter. At the time visited, about the end of October, there were only seven men employed inside. The mine generates some carbureted hydrogen gas, and requires a vigorous current of air.

There are one hundred coke ovens built at this mine, and as soon as it is properly opened, mining will be carried on extensively.

### Oak Ridge Mine.

Operated by F. Williams & Company, in Armstrong county, on the Low Grade division of the Allegheny Valley railroad, about a mile above Fairmount mines, on the opposite side of Red Bank creek. The location of the mine necessitated the building of a bridge across the creek, in order to bring the product to the railroad. It is a drift opening with an incline plane, to take the coal from the mouth of the pit to the tipple. Superintendent, J. C. Baker, and mining-boss, Henry Williams. The workings are part double and part single-entry. Size of entry, eight feet wide by five feet eight inches high. Rooms twenty-one feet wide, and ribs fifteen feet. Average thickness of coal, five feet. Ventilation is produced by a furnace, and in good condition at the time visited. There was an air-crossing in the first left-hand butt entry, where the return current crosses the intake on its way to the furnace. There were fifty miners and five boys employed in December. This work has been opened, and drum-house, blacksmith-shop, six double-houses, boarding-house, office and store, coal shutes, incline plane, sidings, trestle, bridge, and all the requisite equipments, built within the year.

### Port Royal Shaft.

This mine is located on the B. & O. R. R. about five miles east of West Newton. Opened and operated by the Port Royal Coal and Coke Company. Superintendent, John M. Owens. Mining-boss, Joseph Redfern. The mine is a shaft opening two hundred feet deep from landing. Size, seventeen by nine feet. It is in three compartments, two for hoisting purposes and one for upcast, through which the exhaust steam from the pump escapes. There are safety-catches on both of the cages and they use wire ropes, one and one-eighth inch, for hoisting.

The machinery on top consists of a pair of engines with four boilers (only two of which are in use) twenty-four feet long and thirty-six inches in diameter. The shaft was sunk to the coal, and the buildings and machinery erected with some dwelling-houses, blacksmith shop, tipple house, office, &c., all of which has been accomplished during the year 1882. Thickness of coal is about six feet. The workings are only just started from the bottom of the shaft and at present they are wet and generating considerable fire-damp. They are working three shifts, eight hours each, and about seven men on each shift. The workings are not far enough advanced to employ mules underground.

### Acbarr No. 2 Slope.

J. L. Turner of Greenville, Mercer county, has opened another slope in Butler county near Acbarr No. 1. The new slope is one hundred and eighty feet long. Thickness of coal three feet six inches. The product of this mine is shipped on the Shenango and Allegheny railroad.

### Allegheny Coal Company's Mines.

This is a slope opening. Owned and operated by the Allegheny Coal Company. Located near Hilliard, Butler county and at present under the superintendency of F. Morrison.

The mine was opened during the summer of 1882, but very little coal was shipped during the year, as the branch track from the S. & A. R. R. was not completed until late in November.

### Logue Mine.

This is a new mine just opening by the Mercer Mining and Manufacturing Company, in Butler county, near New Hope. The main entry about two hundred yards. They employ only a few men. The railroad connections are not completed. Superintendent, Richard Lewis. and pit-boss, George Jenkins.

M. Saxman, junior, & Co., have sunk a new shaft near the P. R. R. not far from their old openings, east of Latrobe.

D. B. Ashbaugh has opened a new mine, west of Leechburg, for the Leechburg Coal Company on the West Penn railroad and has built houses and graded a siding. The tipple and tipple-house are completed. The mine is a drift opening.

The Foster Coal Company are opening a new mine in Indiana county. It is under the superintendency of D. S. Robinson, and opened on the double entry plan, and will, when its inside workings are fairly opened, and its railroad connections completed, be one of the best mines in this section. The coal will be shipped on the West Penn railroad.

### Smith Mine

Is located on the Allegheny Valley railroad, near Kelly Station, and though not very extensive as yet, can be made into a good mine with proper management. Operator and superintendent, J. R. Smith. Pit-boss, Uriah Shearer. It is a drift opening, and the coal is conveyed to the railroad over a short incline plane. Most of the coal mined, up to the time of my visit, had been used for coaling the engines on the Allegheny Valley railroad.

### The Westmoreland Shaft.

Operated by the Westmoreland Coal Company. A description of this shaft is given in the last report. The following is the plan of the roads and openings at the bottom of the shaft, with the location of the machinery, pumps, &c.:

### ACCIDENTS.

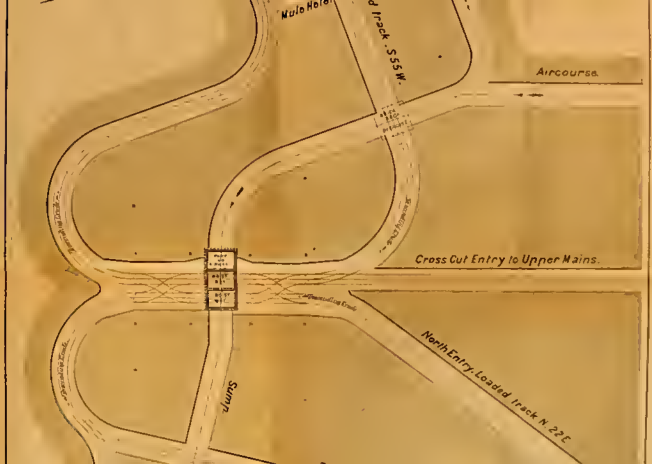
ACCIDENT NO. 1.—Henry Rose, a driver in the Rostraver mine, Westmoreland county, was fatally injured on the 2d of January, 1882, in the afternoon about four o'clock, by a fall of "horseback," weighing from eight to ten hundredweight, by which his arm was broken and head and body bruised. He was alone on the entry when the accident happened, and when found he was unconscious, and could not give any account of how it occurred, and remained in that condition until the time of his death, about 5, A. M., on the 3d. Soon after the accident the following parties came to his assistance and rendered him all the help they could: F. M. Roley, Orlando Kennedy, John Roy, and John Thomas. They were all working near the place and were soon on the entry where it happened. On the investigation, F. M. Roley stated that he thought the stone was safe, as far as he noticed it. Orlando Kennedy did not know anything about the stone being dangerous. John Roy did not know anything about the stone—had not been up the entry only two or three times before the accident happened. John Thomas had passed where the stone was, on the entry, many times, but did not know anything about the stone being dangerous.

After examining the above, I called to see other persons in the mine who were supposed to have noticed this part of the entry prior to the accident, and I found that they all agreed in their views with the above statements. The following is a copy of the inquisition:

*A copy of the inquisition held on the body of Henry Rose.*

COMMONWEALTH OF PENNSYLVANIA, } *ss:*
*Westmoreland County,* }

An inquisition indented and taken at Rostraver coal works, in the county of Westmoreland, the third day of January, in the year of our Lord one thousand eight hundred and eighty-two, before me, Samuel Daugherty, a justice of the peace of the county aforesaid, upon the view of the body of Henry Rose, then and there lying dead. Upon the oaths of Jacob T. Roly, Jacob W. Amalong, Patrick Gilmore, John C. Thomas, John Fields, and John Vaughan, good and lawful men of the county aforesaid, who, being duly sworn to inquire on the part of the Commonwealth, when, where, how, and after what manner the said Henry Rose to his death, do say upon their oaths that Henry Rose came to his death on the 2d day of January, A. D. 1882, by accident, the immediate cause being the falling of slate on his body in the Rostraver coal mines, county and State aforesaid; and moreover, the parties aforesaid doth say that they had, upon first appearance, good reason to believe that he came to his death by other causes than that aforementioned.



and openings at the bottom of the shaft, with the location of the machinery, pumps, &c.

### ACCIDENTS.

ACCIDENT No. 1. Henry Rose, a driver in the Hostetter mine, Westmoreland county, was fatally injured on the 21 of January, 1889, in the afternoon about four o'clock, by a fall of "horseback," weighing from eight to ten hundredweight, by which his arm was broken and head and body bruised. He was alone on the entry when the accident happened, and when found he was unconscious, and could not give any account of how it occurred, and remained in that condition until the time of his death, about 8 A. M. on the 22. Soon after the accident the following parties came to his assistance and rendered him all the help they could: F. M. Roley, Orlando Kennedy, John Gay, and John Thomas. They were all working near the place and were soon on the entry where it happened. On the investigation F. M. Roley stated that he thought the stone was safe as far as he noticed it. Orlando Kennedy did not know anything about the stone being dangerous. John Gay did not know anything about

In witness whereof, as well as the aforesaid justice of the peace as the jurors aforesaid, have, to this inquisition, put their hands and seal, on the day and year and at the place above-mentioned.

SAMUEL DAUGHERTY, [SEAL,]
*Justice of the Peace.*
JACOB T. ROLEY, [SEAL,]
*Foreman.*
JACOB W. AMALONG, [SEAL,]
PATRICK GILMORE, [SEAL,]
JOHN C. THOMAS, [SEAL,]
JOHN FIELDS, [SEAL,]
JOHN VAUGHN, [SEAL.]

I do hereby certify that this is a true copy of all the proceedings in the above case.

SAMUEL DOUGHERTY,
*Justice of the Peace.*

ACCIDENT NO. 2.—In McCloskey's pit, on the Monongahela river, (operated by Brown heirs.) Milton Soles had his legs and body badly bruised by a fall of slate and coal, on the 14th of January, 1882, and died from the effects of his injuries ten days thereafter. He was a man fifty-six years of age and had a family of grown-up children.

ACCIDENT NO. 3.—Cassius Pierce, a single man, working at the Larimer mine of the Westmoreland Coal Company, had his leg broken, on the 18th of January, by an empty car running down the incline plane.

ACCIDENT NO. 4—Martin Volk, a married man, was hurt by slate falling on his back, while at his work in the Waverly No. 1 mine, on the 23d of January.

ACCIDENT NO. 5.—William M. Williams, a boy sixteen years of age, working with his father at the Southside mine of the Westmoreland Coal Company, was fatally injured by falling off a trip of loaded cars in the mine, on the 26th of January. The accident took place at the seventh parallel dip, between the second and third butt. He had finished his day's work, and his father had gone home, but William thought that he would stop and help one of the drivers. He went down with the driver and helped him to gather his trip, and took the first two wagons up, then brought the mule down for the other two, and as soon as he started up the second time and had got about twenty yards up the entry, he fell off the front of the wagon, the front wheel going over his breast and injuring him so badly that it caused his death in about two hours after the accident.

ACCIDENT NO. 6.—Edward Twigger, a boy fourteen years and nine months of age, employed at the Southside mine, met with an accident on the 28th of January, which resulted in his death in about six hours after being taken home. It was rather singular, and very unfortunate, that these two boys should come to their deaths in such a simple manner and so soon after each other. Neither was at his post of duty when the accident occurred.

Young Twigger was employed to shovel slack under the tipple, but this morning, not having anything to do, and while waiting for coal, he had gone up on the platform that leads from the mouth of the bank to the tipple. When the coal came out and was taken to the tipple, he jumped in between two cars to uncouple them, and as soon as he lifted the coupling the cars parted and he fell in between them. The wheel of the second wagon caught him on the left side and squeezed him very severely, causing the rupture of some internal blood vessel.

Inquests were held on the bodies of both by the coroner of Westmoreland county, and verdict in accordance with the above facts rendered.

ACCIDENT No. 7.—John Smith, miner, working in the Ocean mine, on the Baltimore and Ohio railroad, was killed by slate falling on him, on the 16th of January, at about four o'clock in the afternoon. John Smith and William Hughes were working in room No. 1, in No. 14 entry. The slate that fell was about four yards long and four feet wide in the widest part. They had two posts under it. Smith went to strike the posts out to get the slate down, and went in between the posts and the face of the room. When he struck the first post out the slate swung the other and dropped on him, killing him instantly. His head struck against a piece of bottom coal that projected out, fracturing his skull. His left leg was also broken and his body badly bruised. The manner in which he came to his death should be a warning to his fellow miners to guard against the habit of going under the slate to knock the posts out.

I was sorry, upon my investigation in this case, to find that the deceased had been so reckless. The nature of this slate is so treacherous that it requires a man to be continually cautious when necessitated to work under it—to have it well propped and properly secured—and when the props are withdrawn, not to risk himself under, but to be sure to be beyond its reach.

ACCIDENT No. 8.—Theodore Stahley, on the 4th of February, had his foot smashed by a post, at the Enterprise mine, operated by Dillinger & Rafferty.

ACCIDENT No. 9.—Thomas Birch had his leg broken, on the 17th of February, at the Northside mine of the Westmoreland Coal Company.

ACCIDENT No. 10.—James McNulty, on the 7th of February, had his leg broken above the ankle, by a fall of coal and slate, at the M. Graver mine.

ACCIDENT No. 11.—W. Goodbread was fatally injured, on the 2d of February, by a premature explosion of a blast, at the Leechburg mine, operated by D. B. Ashbaugh, breaking several of his ribs and rupturing a blood-vessel, producing fatal hemorrhage.

ACCIDENT No. 12.—Theo. Fullerton was killed at the Amieville mine, on the Baltimore and Ohio railroad. He was working at the tipple, and lost his life while cleaning the mouth of the chute, on the 2d of February, by putting his head between the weight-box and the nut-coal chute.

ACCIDENT No. 13.—On the 27th February, a single man by the name of Chas. Rudolf, was bruised by a fall of slate, at the Cornell & Werling mine.

Accident No. 14.—Alexander Walker was fatally injured on the 17th of February, at the Old Eagle mine, and died in about ten minutes after the accident. He was working with Thomas McCormick in a double room, Nos. 22 and 24, No. 6 entry. He was caught by a fall of slate. His right thigh was broken and his head injured, causing his death in a short time as stated above. Thomas McCormick stated that he was about three yards from him when he heard him call. He ran to him and found the slate on his leg. He was not dead, but lived only a few minutes. His death was purely accidental. Thomas Hassy stated at the inquest that he was the second man to be with the deceased after the accident. He found him lying on his side.

Accident No. 15.—William Garrard, March the 7th, had his leg broken by a fall of slate in Waverly, No. 1, mine.

Accident No. 16.—On the 11th of March, James Sterling, a single man, working in the Westmoreland shaft, had his leg broken by a fall of coal and slate.

Accident No. 17.—Chauncey Blair had his arm broken in the Cornell & Werling mine.

Accident No. 18.—On the 15th of March a serious accident occurred at the Rostraver mine, on the Monongahela river, resulting in the death of Aerie Smith, William Housman, and Arthur Jones, a little boy twelve years old, the son of Mr. D. R. Jones, the pit-boss of the mine. Smith and Housman were at their post of duty at the tipple, near the bottom of the incline plane, and little Arthur had brought his father's dinner to send up the plane, when an uncoupled loaded car came running with terrific force down the plane, which is over six hundred and fifty feet long, and of a high angle of elevation, and before they had time to secure a place of safety, they were caught with the above result. Too much care cannot be exercised in handling coal over incline planes. The parties at the bottom are entirely at the mercy of those on top, for most always when a car gets beyond the control of the checkman, and the warning of danger is sounded, it comes too sudden and the time too short for escape. The mind of the person or persons in danger is occupied with his labor, and during the short period that elapses from the signal of danger to its consummation, he is just as apt to jump from a place of safety into danger as to run from it, because, under the influence of the great strain upon the mind, it is natural to be excited and confused.

Those operating mines having incline planes should provide the checkman with all possible means to avoid accidents, and they should also be careful in their selection of men for that position.

The following is a copy of the verdict of the coroner's jury in the inquest held on the bodies of the above-named:

Commonwealth of Pennsylvania, } *ss:*
*Westmoreland county*, }

An inquisition indented and taken at Rostraver coal works, in the county of Westmoreland, Pennsylvania, on the 15th day of March, in the year of our Lord 1882, before me, Samuel Daugherty, a justice of the peace in and for said county, upon the view of the bodies of William C. Housman, Ira H. Smith, and John A. Jones, then and there lying dead, upon the oaths of Jacob W. Amalong, Patrick Gilmon, Joseph S. Wall, David W. Owens, John H. Feals, and Maxwell Derby, good and lawful men of the county aforesaid, who, being duly sworn to inquire, on the part of the Commonwealth, when, where, how, and after what manner the said William C. Housman, Ira H. Smith, and John A. Jones came to their deaths, do say upon oaths that William C. Housman, Ira H. Smith, and John A. Jones came to their deaths on the 15th day of March, A. D. 1882, by an unforeseen accident caused by a wagon loaded with coal running from check-house to the tipple where the above-named William C. Housman, Ira H. Smith, and John A. Jones were at work.

In witness whereof, as well as the aforesaid justice of the peace as the jurors aforesaid, have, to this inquest, put their hands and seal, on the day and year and at the place above-mentioned.

SAMUEL DAUGHERTY, [SEAL,]
*Justice of the Peace.*
JACOB W. AMALONG, [SEAL,]
*Foreman.*
PATRICK GILMON, [SEAL.]
JOSEPH S. WALL, [SEAL.]
DAVID W. OWENS, SEAL.]
JOHN H. FEALS, [SEAL.]
MAXWELL DERBY, [SEAL.]

ACCIDENT No. 19.—Walter Muer, a miner, working in the Isabella mine, on the 27th of March, had his hip and side bruised by a fall of slate in his room.

ACCIDENT No. 20.—On the 27th of March James Lingenbaugh had two of his ribs broken and his body bruised, in the Latrobe mine.

ACCIDENT No. 21.—Bennett Corkus, a single man, had his foot bruised by a fall of slate, in the Waverly, No. 1, mine, March 29, 1882.

ACCIDENT No. 22.—Andrew Allen, a married man, had his arm broken by a fall of slate, in the Saltsburg mine, on the 29th of March.

ACCIDENT No. 23.—John Bruck, single, had his hips and shoulder hurt, on the 21st of March, at the Rostraver mine, by a fall of coal.

ACCIDENT No. 24.—Joseph Roberts had his leg broken by a fall of coal loosened by a blast, on the 25th of March, in the Rostraver mine.

ACCIDENT No. 25.—At the Penn Gas, No. 4, mine, March 28, Samuel Stone, Jr., had his leg broken between pit cars and rib, while taking rails into the mine.

ACCIDENT No. 26.—Joseph Lidner, on the 1st of April, had his collar-bone broken by a fall of slate in Waverly, No. 1, mine.

Accident No. 27.—Wm. Cunningham, hurt by falling under cars at Isabella mine, on the 3d of April.

Accident No. 28.—Hugh McNames, a boy fourteen years of age, had his leg broken by a fall of coal at Burnette's mine.

Accident No. 29.—Charles Radcliffe had his hand injured and face burnt by going to a shot that he thought had mis-fired, at the Hampton mine, on April 7th.

Accident No. 30.—Peter Seiz had his leg broken by a fall of coal, April 17, in the Waverly, No. 1, mine.

Accident No. 31.—Jacob Crise was fatally injured, on the 24th of April, in the West Newton shaft, by a fall of coal, and died on the 25th. Edward Burkhart and Jacob Crise were working in a room together at the time of the accident, according to Edward Burkhart's testimony. Crise was shearing the coal, and he (Burkhart) was holding against it. He said that they had no sprags under the coal—that Crise had said that the coal would hold without spragging. They had no sprags under the other two cuts, and they thought this would stand the same as they did without spragging. They had sprags but made no use of them, thinking that they were not needed. The amount of coal that fell would weigh about a ton, and some of it had to be broken before he could be got from under it.

The following is the testimony of Dr. I. H. Patton, who attended him: "I was called at eleven o'clock, A. M., April 24, 1882. He complained principally of pain in his bowels, but he was bruised on the left hip; could see no other bruises; I did what I could for him; reaction never set in; his bowels and stomach, I think, were crushed." He died about one o'clock, P. M., on the 25th.

Accident No. 32.—James T. Irving, a single man, aged thirty-two years, employed at the Reimerton mine, was fatally hurt by falling under a railroad car, while shifting flats to the tipple, on the morning of May 12. Irving, Ward Blanchard, and Isaac Garling were helping to move the cars. Blanchard stated that he was driving the horse to shift the flats. He heard some one calling. He stopped the horse as soon as he could, and went to see what was the matter. He found Irving lying by the side of the track, with his face toward the cars. He saw that the fingers of the right hand were mashed and the hip of right side was bruised. He helped to carry him home.

Isaac Garling stated that he had been requested by Mr. John Wagner to help at the tipple. Irving and he were pushing the same car. He had his shoulder against the car in front of Irving. At the time Irving fell, he happened to turn his head, and saw him under the car between the wheels; he saw him getting out; he got out himself.

A. J. Davis, an ore miner, stated that he came into the house shortly after Irving was brought in. Irving was living when he came into the house, but he could not speak. He did not speak a word after he was hurt. He lived about twenty or twenty-five minutes. His left leg was bruised above the ankle; the flesh was badly lacerated, and the bone broken and in sight. He was injured across the abdomen. In Davis' opinion, he must have burst something inwardly. His right hip was crushed and two of the middle fingers of his right hand mashed.

ACCIDENT No. 33.—Patrick Hickey, a miner in Penn Gas, No. 1, shaft, was fatally injured while working in his room, in upper No. 11 entry, on Friday, May 12, about three o'clock, P. M. He died on Saturday, noon. Hickey had been mining about Irwin for about twenty-five years. He was fifty-seven years of age. At the time of the accident, he was bearing-in, when a piece of slate, five feet long and twenty inches wide, tapering at both ends, fell, and caught him on his back and shoulders, seriously injuring and bruising him in such a manner as to cause his death as above stated.

ACCIDENT No. 34.—Thomas Griffiths, a miner working in Barnes' mine, Butler county, had his collar bone broken by a fall of coal on the 13th of May.

ACCIDENT No. 35.—James Goodman had his back hurt by a fall of slate in the Northside mine on the 16th of May.

ACCIDENT No. 36.—William Bond, a single man, eighteen years of age, on the 17th of May, at the Oak Hill, No. 4, mine, had his leg badly cut and bruised by a car.

ACCIDENT No. 37.—On the 24th of May William Sindof, a married man, fifty years of age, working at the Saltsburg mine, was bruised by a fall of coal.

ACCIDENT No. 38.—Andrew Reymer was killed by a fall of roof in the Standard mine on the 28th of May, in room No. 9, in No. 1 south entry, at about two o'clock, P. M. Robert Cowan, the boss driver, stated that he gave him a wagon to load, and in about fifteen minutes he went for the wagon and found that the roof had fallen, partly covering the wagon, and not seeing Reymer, supposed that he must be under the fall. As soon as he called help they went in and found that there was about five wagons full of the roof down, but could not see anything of Reymer. After clearing some of the fall off they came across his body; he had been completely covered, and to all appearance killed instantly. He left a wife but no family.

ACCIDENT No. 39.—Robert McMillin had his foot hurt in the Cornell & Werling mine on the 28th of May.

ACCIDENT No. 40.—Joseph Bradigan had his body injured by a fall of coal in the Amieville mine on the 29th of May.

ACCIDENT No. 41—O. C. Bransthover, May 31, was bruised on the hips by a fall of slate in the Eureka mine.

ACCIDENT No. 42.—James Auld was injured by a fall of coal in Loyal Hanna mine on the 16th of May.

ACCIDENT No. 43.—Henry Zimmerman, a miner working in Waverly, No. 2, mine, on the 3d of June, was killed by a fall of slate in No. 27 room, in No. 1 entry. His head was bruised; his skull fractured. He was dead when found. William Cath, when the accident happened, had gone home, and when Zimmerman failed to come home at his usual time, he and William Wolpel went into the mine to look for him, and when they came to Zimmerman's room they found him under the slate dead. He was a married man, and left a wife and one child.

Accident No. 44.—John Marchbank, a miner working in the Yough. Slope, near West Newton, was fatally injured on the 7th of June, and died in two days after the accident. He was working in room No. 32, in No. 1 entry. He had fired a shot, and after the shot had gone off he went into the face of the room to see what it had done, without examining the slate, and while he was under the slate it came down on him. His leg was broken; his body bruised, and his head cut. His room was in good order—well propped. He was found by the driver when he went for his wagon. No person knew how long he had been under the fall, and he was not able to give any account of it himself. He was a man fifty years of age and had a wife and two children.

Accident No. 45.—Michael Dorman, a miner working in Waverly, No. 1, mine, was killed by a fall of coal while loading a car, on the 8th of June. The accident occurred in room No. 8, in No. 21 entry. Dorman and Thomas Cotgive were working together, and, according to Cotgive's statement, Dorman was loading a car and had the shovel in his hand when the coal fell on him. The coal had been loosened by a shot. Cotgive, at the time of the accident, was bearing-in in another part of the room. It happened about 4 o'clock, p. m. Dorman was a married man, about forty-four years of age, and had a wife and three children.

Accident No. 46.—N. F. Johnson, a miner working in Barnes mine, Butler county, had his back broken by roof falling on him while wedging down loose end of coal in his room in the second right entry, on the 12th of June. He suffered great pain, but in spite of all efforts, he died on the 16th of July.

Accident No. 47.—William Tall, a miner, working in Coulter & Huff mine, east of Greensburg, on the Pennsylvania railroad, was killed on the 19th of June, at about half past ten o'clock, a. m., by a fall of slate in a break-through between rooms Nos. 18 and 19, in No. 3 entry. Tall was working in No. 5 entry, and came from No. 5 to No. 4 entry, through No. 16 air-course, in No. 4, and got into No. 18 room, driven from No. 3 entry, which, at the time, was used for a traveling way, and was in a safe condition, and which he should have followed on his way home; but, in place of doing that, he went to go through a break-through into No. 19 room, and while just getting into No. 19, the slate fell, killing him instantly. Samuel Stewart and his father were with William Tall at the time of the accident. They were walking in front of him, and had just passed from under the slate when it fell, but Tall was right under it. Samuel Stewart was walking in front, his father next, and Tall last. After the slate fell, five other persons came to assist in taking the injured man from under the fall, and, according to S. Stewart's statement, they were over ten minutes before he was taken out. John Anderson and Cornelius Hagerman were present and helped. They said he was dead when they came to him. He was lying on his back, with his face up. They estimated that the weight of stuff that fell was over two tons. He was a married man, and had a wife and four children.

ACCIDENT No. 48.—Valentine Darr, on the 29th of June, had his leg broken by a fall of coal, in the Red Bank mine, operated by the Fairmount Coal and Iron Company, in Armstrong county.

ACCIDENT No. 49.—John Sawer had his fingers crushed by cars, at Larimer mine, on the 1st of July.

ACCIDENT No. 50.—John Koccollock was killed at the Morewood "B" shaft, by a loaded car of coal, on the 5th of July. He was working in room No. 48, in the straight hill entry, and had a car of coal loaded, and for some reason he undertook to take it to the mouth of the room. The room was going to the rise from the parting to the face, and the grade of the road was very steep. When he started the car, he got in front of it, for the purpose of guiding and stopping it when he would come to the mouth of the room, but before it reached there it had gained such a momentum that he failed to check it. The car took a straight course across the entry, carrying Koccollock in front of it, and wedging him with such force against the opposite rib that it killed him instantly. He was a Hungarian, and said to have a wife and family in that country.

ACCIDENT No. 51.—Robert Brown, a single man, working in the Southside mine, near Irwin station, had his leg broken by a fall of coal on the 8th of July.

ACCIDENT No. 52.—Robert Conners was killed by an explosion of gas in the Yough slope, on the B. and O. road, on the 11th of July, at about six o'clock, A. M. His body was found on No. 2 main entry, near mouth of No. 4. He was only burnt slightly, and to all appearance the cause of his death was the after-damp. His face and hands were slightly burnt, but none of his body, not even his clothes, showed signs of the effects of fire, which lead those that assisted in taking him out after the explosion to the belief that the after-damp was the cause of his death. The pit-boss and the fire-boss stated at the time of the investigation that they had warned the men not to go in until the fire-boss had been around and had reported it safe for them. John Murphy, a miner working in No. 1 face entry, stated that the places were examined every morning before they were allowed to go in to their work. David Dobson, a miner working in No. 4 entry but a short distance from where Conner worked, stated that he heard James Latimore, the pit-boss, warning Conner not to go in until John Gould, the fire-boss, had been in. The fire-boss, John Gould, stated that the evening before the accident a part of the hoisting machinery had been disabled and it was thought that the mine would be idle the next day, but owing to the efforts of R. H. Latimore, the operator, in going to Greensburg and succeeding in obtaining the necessary means to remedy the broken part, it was decided to start the mine the next day, but at a later hour. He had no knowledge of Conner being in the mine that morning, and no one had seen him going in. He also stated that he warned Conner when he commenced working in that part of the mine, which was only a few days before the accident, not to go in until after he had made his examination and report it safe. On one occasion, prior to the explosion, Conner had come to the mine before him, but he had waited in a safe place until he had come, and did not go in to his work till it was reported safe. On Saturday the 8th and on Monday the 10th he found no gas accumulated there, but found the places all clear. This being the case on the day before the explosion, and Conner, a man that had worked the most of his life among gases, and professing to understand their nature, it is supposed that he must have thought it safe to go in without waiting for it to be examined. This serious accident should be a lesson not to risk into places known to generate gas until their condition has been examined and reported safe to enter.

Accident No. 53.—William Valentine, a miner working in the Southside mine, had his leg broken by a fall of coal on July 14.

Accident No. 54.—Valentine Hacker, working in Loyal Hanna, had his foot bruised on July 15.

Accident No. 55.—Henry Argyle, a single man, twenty-four years of age, working in the Sandy Creek mine, was instantly killed on the 17th of July by a fall of slate. He was working in room No. 78, in No. 6 entry, in pit No. 2. William Smetz was working with him at the time of the accident, but could not say whether Argyle was knocking coal down or taking up some bottom coal when it happened. The slate caught him on the head. His skull was fractured above the right eye and back of the head, causing his death instantly. They had been talking about the slate and he told Smetz that he would take it down as soon as his car was full, but before he had accomplished that it fell.

Accident No. 56.—Adam Shook, a miner in the M. Graver mine, was killed on the 20th of July, between 8 and 9 o'clock, a. m., in No. 1 entry, while drawing entry stumps, by a fall of roof coal. He was about thirty-five years of age, a married man, and had a wife and six children. He had been mining here about two years since last February. Henry Gottshalk was working with him; they were both drawing entry pillars. Henry Gottshalk was working on the left of the entry, and Adam Shook on the right. The roof that fell was about six feet six inches long by two feet six inches wide, and about eleven inches thick. His body did not show any bruises, but it was supposed that his neck was broken. At the time of the accident he had just commenced to bear-in, and had neglected to examine the roof.

Accident No. 57.—Jabez Hartland, a miner at the Westmoreland shaft, had his leg broken by a fall of slate, on the 18th of July.

Accident No. 58.—Thomas Haley was killed by a fall of roof slate, on the 21st of July, in the Mahoning Furnace coal mine. He was working in room No. 5, in Buzzard's entry, drawing the rib out, and the night before the accident the top had broken, and it had fallen on a car that he had in. The front of the car was in sight and he thought that he could get it loose. While attempting to loosen the car, some more of the roof fell, and caught him against the car. His neck was broken and his breast injured. Jacob and Chambers Bowser were working near him. They stated that they had seen him not ten minutes before he was found dead. They also said that the bit-boss had told him to leave the car there, and had cautioned him not to do anything to it till he would come back. But when the bit-boss left he insisted on working and told them that it was not dangerous. When they heard the fall they ran to him, and found him as stated.

ACCIDENT No. 59.—On the 25th of July, between two and three o'clock, P. M. at the Northside mine of the Westmoreland Coal Company, Hilary Zentner, a miner, working in No. 8 entry, drawing the rib of an air-course from No. 8 to No. 9 entry, was killed by a fall of slate. The slate was from six to seven feet long and about three feet wide. It fell on his head and back. At the time of the accident, he was drawing posts out, and had his light hung on one of the posts when the slate fell. The following is a copy of the inquisition:

COMMONWEALTH OF PENNSYLVANIA, } ss:
*Westmoreland County,* }

An inquisition taken and indented at Coke Hill, in the county of Westmoreland, on the 25th and 26th days of July, in the year of our Lord one thousand eight hundred and eighty-two, before me, John Clingan, coroner of the county aforesaid, upon the view of the body of Hilary Zentner, then and there lying dead, upon the oaths of Alexander Cook, B. Alsworth, Fred. Railing, Peter Hilt, Lewis Wise, B. Mitchell, good and lawful men of the county aforesaid, who, being sworn and affirmed to inquire, on the part of the Commonwealth, when, where, how, and after what manner the said Hilary Zentner came to his death, do say, upon their oaths and affirmations, according to the testimony of the witnesses, that the aforesaid deceased came to his death by reason of a quantity of slate falling upon him, at about two o'clock, P. M., the 25th day of July, 1882, in the old Irwin, or Northside, mine, in North Huntington township, Westmoreland county, Pennsylvania; that said fall of slate was accidental, and no blame is attached to the company owning said mines, or their employés: and they further find that this inquisition was held upon notice from said company to the coroner, and in accordance with the provisions of section fourteen of the act of Assembly of 18th April, 1877.

In witness whereof, as well the aforesaid coroner as the jurors aforesaid, have to this inquisition put their hands and seals, on the day and year, and at the place first above mentioned.

JOHN CLINGAN, [L. S.]
*Coroner.*
ALEXANDER COOK, [SEAL.]
*Foreman.*
B. ALSWORTH, [SEAL.]
FRED. RAILING, [SEAL.]
PETER HILT, [SEAL.]
LEWIS WISE, [SEAL.]
B. MITCHELL, [SEAL.]

Accident No. 60.—On August the 12th, James Cruson had his foot badly bruised by a fall of coal, at Millwood shaft.

Accident No. 61.—William Johnson was hurt by a fall of roof, at the Standard mine, August 25, but not seriously.

Accident No. 62.—Thomas Callahan, a miner in the Youghiogheny Valley mine, was killed in room No. 5, in No. 3½ entry, on the 25th of August. It is supposed that he was killed early in the morning, for none of those working near him had heard him working that day, and it was their impression, as well as the driver's, that he was not in. He was covered by the slate that had fallen on him, and one man had been in the room and noticed the slate down but did not think that he was under it. He had three little children at home and he was keeping house with them. That evening, when he failed to come home at his usual time, the children began to inquire for him, and when it became known that he had gone to his work that morning, some persons went into the pit to search for him and found him lying under the slate. His body was not much bruised but it was supposed that he had been crushed inwardly.

Accident No. 63.—James Hanlan, a single man, working in the Plum Creek mine, was killed by a fall of coal and slate, on the morning of the 30th of August.

Accident No. 64.—Joseph Donehue, a single man, had his hand mashed on the 31st of August, in Millwood shaft.

Accident No. 65.—A man by the name of William Lynch had his leg crushed by attempting to get on cars while in motion, at mouth of Horner & Roberts' pit, on the 9th of September. Lynch was not employed at the Horner & Roberts' mine.

Accident No. 66.—James Powell was slightly burnt by gas, in the Penn Gas, No. 2, shaft, on the 14th of September.

Accident No. 67.—Robert Millburn, eager in Penn Gas, No. 1, shaft, was fatally injured by descending cage, on the 16th of September. The following is the statement of the accident, by Mr. T. Frank Wolf, assistant engineer of the Penn Gas Coal Company:

"About 2, p. m., the rope attached to the loaded cage broke close to the socket, leaving the cage standing on the keeps at the bottom. Robert Millburn, the cager at the bottom, and Frank Bolan were to attach the rope to the cage after it was repaired. The broken end of the rope had been drawn to within a few feet of the top and then drawn out by hand for repairs, which would let the opposite cage down to within about fifteen feet of the bottom, and was held there by the brake of the engines. When the men at the top had repaired the broken end, they called to the men below to 'Look out, we are going to let the rope down.' The men at the bottom answered, 'All right,' and, without notifying those on top, commenced to climb up the shaft timbers under the hanging cage. Frank Bolan was the first to ascend. He got up all right, and on top of the other cage, to which the rope was to be attached. Millburn was still in the shaft, under the hanging cage, when it descended and caught him. The men at the top of the shaft supposed that everything was all right when they answered from below, and told the engineer to let down the empty rope. When the engineer took the brake off the engines, the hanging cage (which was a dead weight on the engines) dropped almost to the bottom before the engineer could get the steam on to check it. When the cage dropped it caught Robert Millburn, who was still in the shaft, throwing him to the bottom, injuring him fatally."

The following is the verdict of the coroner's jury:

"Robert Millburn came to his death by reason of a cage used for hoisting coal at Penn shaft, No. 1, Irwin Station, falling upon him at the bottom of the shaft, at 4½, P. M., September 16, 1882. Said shaft belonging to the Penn Gas Coal Company, in North Huntington township, Westmoreland county, Pennsylvania. That the falling of said cage was accidental, and could not have been prevented by the said company or its employés; and further, they find this inquisition was held upon notice from said company to the coroner, and in accordance with the provisions of section 14 of the act of Assembly of 18th of April, 1877."

ACCIDENT No. 68.—John Boyd, employed at the tipple of the Iron City mine, on the Monongahela river, was killed on the 4th of October by a car running down the incline plane without being hitched to the rope. Jacob Ammon, the checkman, could not account how it happened. In the opinion of others that were present at the time of the investigation, he must have forgotten to hook the rope to the car, and that he had started the car under the impression that it was hooked. John Boyd was about thirty years of age and had a wife and two children. The accident occurred about three o'clock, P. M. He made an effort to escape by getting down under the tipple, but the time was too short. His head was caught and the upper portion of his body. His right arm was broken and his skull fractured. He died instantly. Accidents of this nature should impress upon those employed on the top of incline planes the importance of being watchful in the discharge of their duties, also that all contrivances used as preventatives are kept in good working order.

ACCIDENT No. 69.—Timothy Hollihan, working in Larimer, No. 3, had his rib broken by a fall of coal and clay vein on the 20th of October.

ACCIDENT No. 70.—H. W. Lamp, a boy, fourteen years of age, and son of J. P. Lamp, the pit-boss at the Belleview mine, was killed on the 9th of October by the bull-wheel, used in that mine for hauling. At the time of the accident there was no one present with him, and he had gone in unknown to anyone that he intended to go in as far as where the wheel was. He was employed on the outside to help the engineer and fire the boiler, but sometimes he would go into the mouth of the drift to see if there was any coal laying on the track that wanted to be removed. He was a boy that had great delight in machinery and of a very inquiring mind, and it is thought that his object was to examine the wheel-working when unfortunately he was caught.

Accident No. 71.—William Jones Davis, a young man twenty-one years of age, working at the Hecla shaft, was killed on the 14th of October, at about 8.25, P. M., by falling into the shaft from top to bottom, a distance of over 200 feet. He was a carpenter, and had been chipping a piece of the cap at the top of the shaft when he fell. William Blake and Owen Rees saw him falling. Blake stated that he had been told to get out of the way, that they wanted to hoist the cage on the other side of the shaft. He got up and took the board that he had been sitting on with him and stood on the surface, near the mouth of the shaft, and said, "All right." When the cage that was up came down from the platform to where he had been working it tilted the board and took him with it to the bottom. He was found in the sump with his both legs and neck broken.

Accident No. 72.—Jacob Abbert had his leg broken, on the 27th of October, at the Leechburg mine, by a fall of coal.

Accident No. 73.—George Richards was bruised by a fall of coal at the M., M. and M. Company mine, on the 31st of October.

Accident No. 74.—This accident was caused by an explosion of gas in the Morewood "A" shaft, at about 10 o'clock, A. M., the 8th of November. Three Hungarian miners named Mich. Moolige, Stephen Fabric, and Covanch Valyn had gone into the "A" shaft. This shaft had been idle for over four weeks, and none of the inside workings going. They meandered around the works until they came into room No. 2 in second east cross-entry. This room had been worked by another Hungarian, by the name of George Malager, and on the last day he worked in it (before the shaft stopped) a part of the roof fell. When they came into this room they went on top of the fall to examine the roof, and fired the gas, and were all three severely burnt. They had no knowledge of gas, and did not suspect any danger there. Malager said that there was no gas in the room when he worked there. He had turned the room and worked in it until they stopped working in the shaft.

Accident No. 75.—William Bennett, miner working in the Horner & Roberts mine, near Elizabeth, on the Monongahela river, was killed by a fall of slate, on the 10th of November, in second eight entry, (swamp,) in room No. 15. He had his both legs and right arm broken, and his body badly bruised. The slate was 16′ 3″ in length and about 3′ 4″ in width and 9½″ thick. The following persons came into the room where he was found and helped to get him out: Robert Bullen, working in room No. 14; Thomas Hart, working in room No. 12, and William Naylor, working in room No. 17. Naylor stated that he had been in Bennett's room the evening before the accident, and that there were three posts under the slate then. He asked Bennett if he was going to take the posts out, and he said he was. The conclusion arrived at during the investigation was that he must have been caught about half past five o'clock, A. M., shortly after he came in. He had an empty car and must have been in a hurry to fill it and had got under the slate. All those working near him agreed that he came to his death owing to having taken the slate-posts out the night before and going under it in the morning without replacing them. He was a married man, had a wife and four children, and was very highly spoken of by his fellow-workmen.

ACCIDENT No. 76.—This accident occurred at the same mine, in room No. 6 in second nine (swamp) entry, on the 10th of November, about half past six o'clock, A. M., the same morning as the above accident, by an explosion of gas, burning William Watkinson on both arms, hands, and face, and John Urmson on one of his arms and face. The room in which the explosion took place had a clay vein on the left, and some of the roof had fallen for about 13 feet in length and 12 feet wide and about 4 feet in thickness. The gas had accumulated in this space. Urmson, not knowing of any gas being there, went to pull some loose slate down and ignited it.

ACCIDENT No. 77.—Thomas Wilson, a single man, twenty-two years of age, met with an accident at the E. and V. mine on the 12th of November by which he had his ribs broken, his shoulder dislocated, and was otherwise bruised by riding on a full wagon while returning from his work.

ACCIDENT No. 78.—George Needer, a man fifty-three years of age, working at the Standard mine, near Mt. Pleasant, was killed by falling into the shaft on the 20th of November. George Needer and his son had gone to the shaft to be lowered into the mine. The son was before his father and came to the top of the shaft, had struck a light and lighted his lamp when his father came, but could not account how his father fell in. Whether he walked into the shaft supposing that the cage was up, or had put down his picks that the handles fell towards the shaft, and in his effort to save the picks from falling in, had overbalanced himself, he could not tell. The son saw him falling and grabbed him by the coat-tail, but failed to hold him. He fell on his head. His blood and some of his brains were on the cover of the cage when it was hoisted up. He was not working in the shaft mine, but was working in the slope, and should have gone down the slope to his work, which would have shortened his distance to travel about fifteen hundred feet. But being that the workings of the slope and shaft were connected underground, he must have thought that it would be easier for him to go down through the shaft and walk from the bottom of it to his work than to go down the slope.

ACCIDENT No. 79.—John Clause, a young man twenty-one years of age, was fatally injured by a fall of coal while at his work on the 22d of November in the Reimerton mine. He was working in John Frank's entry, in rib No. 2, with another young man by the name of Charles Fleming. At the time of the accident he was bearing-in, and had gone about five feet under the coal when it fell, crushing him very severely. It happened at about half-past eight, A. M., on Wednesday, and he died on Saturday at three, P. M.

ACCIDENT No. 80.—John Siestek, a miner, sixty years of age, working in room No. 46, in Hay's entry, in the Plum Creek mine, was killed by a fall of slate, at about seven o'clock, A. M., on the 7th of December. The slate was about eight feet long and two and a half feet wide.

Accident No. 81.—J. E. Smelser, a single man, working in the Saltsburg mine, had his leg broken and a finger cut off, by a fall of slate, on the 8th of December.

Accident No. 82.—Walter Hill had his face and hands burned by an explosion of gas that had lodged in the roof above a fall, in his room, in "A" entry, in the Belleview mine, on the 13th of December. The roof had fallen the evening before, and in the morning, about seven o'clock, he went in, and was anxious to know how much fell, and while examining the fall, the gas ignited.

Accident No. 83.—John Wilson and W. H. Irwin were burned, in the United shaft, on the 14th of December, by an explosion of gas. This accident occurred on account of the driver bringing his naked light in where they were working with safety lamps, but, fortunately, they were not burned dangerously.

Accident No. 84.—John Crusan, working in the Hampton mine, had his leg bruised and the small bone broken above the ankle, on the 30th of December.

## TABLE 1.—SHOWING LOCATION OF COLLIERIES IN THE SECOND BITUMINOUS MINE DISTRICT.

| NAME OF COLLIERY. | Name of Company. | Location—County. | Name of Superintendent. | Post-Office Address. |
|---|---|---|---|---|
| Natrona Mine, | Pennsylvania Salt Manufacturing Company, | Allegheny, | W. H. Richards, | Natora, Allegheny co. |
| Bellview Mine, | Bellview Coal Company, | do. | P. Y. Hite, | Hite Station, P. O., Allegheny co. |
| E. and V. Mine, | do. do. | do. | do. | do. do. |
| Milesville Mine, | Robert Jenkins. | do. | Robert Jenkins, | Sunny Side P. O., Allegheny co. |
| Sandy Creek, No. 1, | N. Y. & C. Gas Coal Company, | do. | J. W. Doak, | White Ash P. O., Allegheny co. |
| Sandy Creek, No. 2, | do. do. | do. | do. | do. do. |
| Plum Creek, No. 1, | do. do. | do. | do. | Negley P. O., Allegheny co. |
| Plum Creek, No. 2, | do. do. | do. | do. | do. do. |
| M. Graver Mine, | M. Graver & Co., | do. | William Fisher, | White Ash P. O., Allegheny co. |
| Osceola Mine, | Osceola Coal Company, | do. | F. H. Dewees, | Greenock P. O., Allegheny co. |
| Weinman, East End, | Jacob Weinman, | do. | Jacob Weinman, | Wilkinsburg, Allegheny co. |
| Weinman & Co.'s Mine, | do. | do. | do. | do. do. |
| Hampton Mine, | Hampton Coal Company, | do. | Major Lawton, | do. do. |
| Duquesne Mine. | N. Y. & C. Gas Coal Company, | do. | J. W. Doak, | White Ash P. O., Allegheny co. |
| Oak Hill, No. 3, | do. do. | do. | John McIntosh, | Turtle Creek P. O., Allegheny co. |
| Oak Hill, No. 4, | do. do. | do. | do. | do. do. |
| Corey Mine, | | do. | | |
| Spring Hill Mine, | Westmoreland Coal Company, | do. | F. Z. Schellenberg, | Irwin Station, Westmoreland co. |
| Alpsville Mine, | Hackett & Rafferty, | do. | J. J. Mahoney, | Duncan P. O., Allegheny co. |
| Old Eagle Mine, | W. H. Brown's Heirs, | do. | John Perry, | Elkhorn P. O., Allegheny co. |
| Winona Mine, | James Skillen, | do. | James Skillen, | Shire Oak, Allegheny co. |
| Horner & Roberts Mine, | Horner & Roberts, | do. | George W. Roberts, Sr., | Elizabeth, Allegheny co. |
| Lovedale Mine, | John A. Wood & Son, | do. | John S. Hollingshead, | do. do. |
| Bellevue Mine, | Gumbert & Huey, | do. | William Huey, | do. do. |
| Roberts & Co.'s Mine, | W. H. Robbins & Co., | do. | M. B. Smith, | McKeesport, Allegheny co. |
| Penney Mine, | Penney Coal Company, | do. | D. H. Lynch, | do. do. |
| James O'Neil Mine, | James O'Neil, | do. | H. D. O'Neil, | do. do. |
| Cornell & Werling Mine, | W. H. Brown's Heirs, | do. | Robert Cornell, | Boston P. O., Allegheny co. |
| Watson Shaft, | Watson & Brother, | do. | James Watson, | Allegheny City, (box 3.) |
| Keystone, No. 1, Mine, | W. H. Brown's Sons, | do. | W. S. Brown, | Port Perry P. O., Allegheny co. |
| Keystone, No. 2, Mine, | do. do. | do. | do. | do. do. |
| Kittanning, No. 1, | Kittanning Iron Company, (Limited,) | Armstrong, | Henry A. Colwell, | Kittanning. |
| Kittanning, No. 2, | do. do. do | do. | do. | do. |
| Mahoning Mine, | | do. | John Wagner, | Mahoning P. O., Armstrong co. |
| Stewardson Furnace Mine, | F B. & A. Laughlin, | do. | R. D. Laughlin, | do. do. |
| Reimerton Mine, | Franklin Coal Company, | do. | I. I. Wagner, | Reimerton P. O., Armstrong co. |
| Red Bank, | Fairmount Coal and Iron Company, | do. | George Mullinger, | New Bethlehem, Clarion co. |
| Red Bank, (cannel,) | do. do. | do. | do. | do. do. |
| Mahoning Furnace Mine, | Wesley Wilson & Co., | do. | Wesley Wilson, | Mahoning Furnace P. O., Armstrong co. |
| Freeport Mine, | James O'Mealy, | do. | James O'Mealy, | Freeport P. O., Armstrong co. |
| Oak Ridge Mine, | Frank Williams & Co., | do. | J. C. Baker, | Fairmount City, Clarion co. |
| Smith Mine, | J. R. Smith, | do. | J. R. Smith, | Manorville P. O., Armstrong co. |
| Acbarr, No. 1, | J. L. Turner, | Butler, | William D. James, | Hilliard, Butler co. |
| Acbarr, No. 2, | do. | do. | do. | do. |
| Burnett Mine, | A. Burnett, | do. | A. Burnett, | do. |
| Union Coal and Coke Mine, | Union Coal and Coke Company, (Limited,) | do. | George G. Stage, | Greenville, Mercer co. |

| | | | | |
|---|---|---|---|---|
| Barnes' Mine, | Mercer Mining and Manufacturing Company, | do. | Richard Lewis, | Pardoe, Mercer co. |
| Logue Mine, | do. do. do. | do. | do. | do. do. |
| Allegheny Coal Company Mine, | Allegheny Coal Company, | do. | Frank Morrison, | Sharon, do. |
| Baker Bank, | L. S. Hoyt, | Beaver, | L. S. Hoyt, | Rock Point, Beaver co. |
| Mansfield Mine, | I. F. Mansfield, | do. | I. F. Mansfield, | Cannelton, do. |
| Clayton Mine, | James & W. F. Clayton, | do. | James Clayton, | Beaver Falls, do. |
| Davidson Mine, | A. Davidson, | do. | David Stinson, | do. do. |
| Hulmes' Mine, | John Hulmes, | do. | John Hulmes, | do. do. |
| Butt Mine, | (Not running,) | do. | | |
| Sterling Mine, | do. | do. | | |
| Beaver Block Mine, | James Sutherin, | do. | John Southerin, | East Palestine, Ohio. |
| Leechburg Mine, | D. B. Ashbaugh, | Westmoreland, | D. B. Ashbaugh, | Leechburgh, Armstrong co. |
| South-West Mine, | South-West Coal and Coke Company, | do. | E. A. Upstill, | Tarr P. O., Westmoreland co. |
| Dillinger & Tarr Mine, | Dillinger & Tarr, | do. | Peter Tarr, | do. do. |
| American Mine, | South-West Coal and Coke Company, | do. | E. A. Upstill, | do. do. |
| Union Coke Mine, | Hurst, Stoner & Co., | do. | Braden Hurst, | Stoner's P. O., do. |
| Enterprise Coke Works, | Dillinger & Rafferty, | do. | W. H. Shannon, | Scottdale, do. |
| Rising Sun Mine, | Markle & Co., | do. | George Markle, | Mt. Pleasant, do. |
| Bessemer Mine, | C. P. Markle & Sons, | do. | F. M. McClain, | do. do. |
| Alice Mine, | J. M. Shoonmaker, | do. | Charles McSweeney, | Scottdale, do. |
| Morewood, Shaft A, | Morewood Coke Company, (limited,) | do. | Morris Ramsay, | Mt. Pleasant, do. |
| Morewood, Shaft B, | do. do. do. | do. | do. | do. do. |
| Standard Slope, | A. A. Hutchinson & Bro., | do. | William Wilcox, | do. do. |
| Standard Shaft, | do. do. | do. | do. | do. do. |
| Hazlett Shaft, | Boyle & Rafferty, | do. | James Devlin, | Stauffer Station, do. |
| Hazlett Slope, | do. | do. | do. | do. do. |
| Mullen Mine, | Mullen & Strickler & Co., | do. | | Mt. Pleasant, do. |
| Buckeye Mine, | J. M. Cochran's Heirs, | do. | F. Bliss, | Stauffer P. O., do. |
| West Overton, | A. C. Overholt & Co., | do. | A. S. R. Overholt, | West Overton, do. |
| Waverly, No. 1, | | do. | | |
| Waverly, No. 2, | | do. | | |
| M. Saxman, | M. Saxman, Jr., & Co., | do. | F. Kiernan, | Latrobe, do. |
| M. M. & M. Mine, | Mutual Mining and Manufacturing Company, | do. | Robert S. Jamison, | Greensburg, do. |
| United Shaft, | United Coal and Coke Company, | do. | R. A. Hope, | do. do. |
| Hecla Shaft, | Hecla Coke Company, | do. | G. C. Hewett, | Weaver's Old Stand, do. |
| Port Royal Mine, | Port Royal Coal and Coke Company, | do. | John M. Owens, | Fitze Henry P. O., do. |
| Leechburg, No. 2, | D. B. Ashbaugh, | do. | D. B. Ashbaugh, | Leechburg, Armstrong co. |
| West Newton Shaft, | | do. | A. W. Osborne, | West Newton. |
| Youghiogheny Slope, | Youghiogheny Gas Coal Company, | do. | Robert H. Latimore, | do. |
| Markle Mine, | C. P. Markle & Sons, | do. | Daniel Cochenour, Sr., | do. |
| Amieville Mine, | N. J. Bigley, | do. | Hugh McGinn, | Sutersville. |
| Ocean Mine, | Youghiogheny River Coal Company, | do. | J. F. Hosack, | Scott Haven. |
| Youghiogheny and Ashtabula Mine, | Youghiogheny and Ashtabula Coal Company, | do. | John Blythe, | Youghiogheny P. O. |
| Armstrong Mine, | C. H. Armstrong & Son, | do. | Robert Marshel, | Buena Vista P. O., Allegheny co. |
| North Webster, | John Gilmore & Sons, | do. | George W. Gilmore, | Webster. |
| Webster Coal Works, | Sneathen & Wilson, | do. | Thomas S. Briggs, | do. |
| Jones & Watkins' Mine, | Jones & Watkins, | do. | Thomas Watkins, | do. |
| Iron City Mine, | Phillips & Mettenzway, | do. | Solomon Stroup, | do. |
| Rostraver Mine, | D. W. Clark, | do. | Abram Rupert, | Lock, No. 4, P. O., Washington co. |
| Rea Mine, | Hodgen & Crumbie, | do. | John Crumble, | Sunny Side P. O., Allegheny co. |
| Arnold Mine, | Arnold Coal Company, | do. | T. C. Pears, | Burrell P. O., Westmoreland co. |
| Eureka Mine, | Fox & Kifer, | do. | Albert Kifer, | Scottdale, do. |

## TABLE I.—SECOND BITUMINOUS MINE DISTRICT—*Continued.*

| NAME OF COLLIERY. | Name of Company. | Location—County. | Name of Superintendent. | Post-Office Address. |
|---|---|---|---|---|
| Pittsburgh and Kiskiminetas Mine, | Pittsburgh and Kiskiminetas Coal Company, | Westmoreland, | Albert Hicks, | Leechburg, Armstrong co. |
| Bagdad Mine, | Bagdad Coal Company, (Limited,) | do. | do. | do. do. |
| St. Clair Mine, | St. Clair Coal and Coke Company, | do. | M. A. Preston, | Latrobe, Westmoreland co. |
| Rankin Mine, | | do. | | |
| Latrobe Coal Works, | Latrobe Coal Company, | do. | D. W. Jones, | do. do. |
| Ridge View Mine, | Ridge View Coal and Coke Company, | do. | | do. do. |
| Shaft No. 1, | Penn Gas Coal Company, | do. | William Wilson, | Irwin Station, do. |
| Shaft No. 2, | do. do. | do. | do. | do. do. |
| Shaft No. 3, | do. do. | do. | do. | do. do. |
| Mine No. 3, | do. do. | do. | do. | do. do. |
| Mine No. 4, | do. do. | do. | do. | do. do. |
| Coal Run Mine, | do. do. | do. | do. | do. do. |
| Larimer, No. 2, Mine, | Westmoreland Coal Company, | do. | F. Z. Shellenberg, | do. do. |
| Larimer, No. 3, Mine, | do. do. | do. | do. | do. do. |
| Southside Mine, | do. do. | do. | do. | do. do. |
| Northside Mine, | do. do. | do. | do. | do. do. |
| Shafton Mine, | do. do. | do. | do. | do. do. |
| Westmoreland Shaft, | do. do. | do. | do. | do. do. |
| Foster Slope, | do. do. | do. | do. | do. do. |
| Greensburg Mine, | Coulter & Huff, | do. | A. W. Jones, | Greensburg, do. |
| Monastery Mine, | H. C. Frick Coke Company, | do. | Robert Ramsay, | Latrobe, do. |
| Loyal Hanna Mine, | Loyal Hanna Coal and Coke Company, | do. | William Dovey, | do. do. |
| Millwood Shaft, | Millwood Coal Company, | do. | Albert Ford, | Millwood Station, do. |
| Isabella Mine, | Isabella Furnace Company, | do. | W. C. Grist, | Cokeville P. O., do. |
| Saltsburg Mine, | Saltsburg Coal Company, | do. | W. S. Robinson, | Saltsburg, Indiana co. |
| Mill Bank, | Laufman & Co., | do. | John M. Osborne, | Apollo, Armstrong co. |

**TABLE II.**—*A Statement showing Characteristics, Number of Employés, Production, etc., of the respective Collieries in the Second Bituminous Mine District, for the year ended December, 1882.*

| NAME OF COLLIERY. | Character of Coal. (Bituminous or Semi-Bituminous.) | Slope, Shaft, or Drift. | Number of pumps. | Number of engines. | Horse power. | Number of boilers. | Number of miners—men. | Number of miners—boys. | Other employees. | Total employees. | Number of mules inside. | Number of mules outside. | Number of locomotives. | Total production of coal in tons. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acbarr, | Bituminous, | Slope, | 1 | 1 | 1 | 1 | 50 | 6 | 16 | 72 | 4 | ... | ... | 1 500 |
| Alice, | do. | Slope, | 2 | 1 | 60 | 2 | 67 | 4 | 19 | 90 | 7 | . | ... | 14,600 |
| Amleville, | do. | Drift, | ... | ... | ... | ... | 142 | 12 | 21 | 175 | 8 | 3 | . | 54,600 |
| Arnold, | do. | Drift, | ... | ... | ... | ... | 45 | 3 | 7 | 55 | 2 | 1 | ... | 2 232 |
| Bagdad, | do. | Drift, | ... | ... | | ... | 44 | 7 | 4 | 55 | 3 | ... | ... | 11,141 |
| Baker, | do. | Drift, | | | ... | ... | 102 | 19 | 7 | 128 | 8 | 1 | . | 54,408 |
| Barnes, | do. | Drift, | 2 | 1 | 30 | 2 | 94 | . | 21 | 115 | 13 | 1 | 1 | |
| Bellview, | do. | Drift, | 1 | 1 | 10 | 1 | 39 | 2 | 6 | 47 | 6 | ... | ... | 15 126 |
| Bessemer, | do. | Drift, | ... | ... | ... | ... | 50 | ... | 7 | 57 | 4 | 5 | ... | 67,634 |
| Burnett, | do. | Drift, | 1 | ... | ... | 1 | 17 | 4 | 7 | 28 | 1 | 2 | ... | 1,770 |
| Coal Run, | do. | Drift, | ... | | ... | ... | 180 | 24 | 26 | 230 | 18 | 2 | | |
| Cornell & Werling, | do. | Drift, | 2 | 3 | ... | 4 | 185 | 15 | 35 | 235 | 9 | 1 | ... | 60.188 |
| Coulter & Hough, | do. | Slope, | 2 | 2 | 50 | 3 | 131 | ... | 47 | 178 | 12 | 2 | ... | 9,000 |
| Davidson, | do. | Drift, | ... | ... | ... | ... | 13 | ... | 3 | 16 | 1 | ... | ... | 877 |
| Duquesne, | do. | Drift, | ... | ... | ... | ... | 117 | 23 | 12 | 152 | 8 | 10 | ... | 66 864 |
| Enterprise, | do. | Drift, | ... | | ... | ... | 14 | 2 | 4 | 20 | 4 | ... | ... | 7 000 |
| Etna and Vesuvius, | do. | Drift, | ... | ... | ... | | 82 | 8 | 12 | 102 | 10 | | ... | 32 722 |
| Eureka, | do. | Drift, | ... | ... | ... | 1 | 49 | 5 | 8 | 62 | 4 | 3 | ... | 10 148 |
| Franklin, | do. | Drift, | ... | | ... | | 36 | 3 | 3 | 42 | 3 | 1 | ... | 4,500 |
| Hampton, | do. | Drift, | ... | 1 | ... | ... | 152 | 18 | 21 | 191 | 17 | ... | 1 | |
| Horner & Roberts, | do. | Drift, | 3 | 4 | ... | 2 | 164 | 11 | 15 | 190 | 7 | | | |
| Hulmes, | do. | Drift, | ... | ... | ... | ... | 13 | 3 | 2 | 18 | 1 | ... | ... | 2,939 |
| Iron City, | do. | Drift, | 2 | | | 2 | 58 | 9 | 11 | 79 | 4 | 4 | ... | 18,159 |
| Isabella, | do. | Slope, | 1 | 1 | 41 | 1 | 75 | 6 | 17 | 98 | 10 | ... | ... | 75 803 |
| Keystone, | do. | Drift, | ... | ... | ... | ... | 150 | 20 | 40 | 210 | 10 | | ... | 10,000 |
| Kittanning, | do. | Drift, | ... | ... | ... | 1 | 49 | 6 | 1 | 56 | 5 | 2 | ... | 24 000 |
| Larimer, No. 3, | do. | Drift, | | | | | 121 | 7 | 25 | 153 | 5 | 1 | ... | 67,518 |
| Latrobe, | do. | Slope, | 2 | 2 | 33 | 2 | 55 | 3 | 6 | 61 | 5 | 1 | ... | 38,814 |
| Leechburg, | do. | Drift, | ... | ... | | | 61 | 9 | 13 | 83 | 6 | ... | ... | 52,079 |
| Loyalhanna, | do. | Shaft, | 3 | 4 | 158 | 7 | 102 | 10 | 72 | 184 | 15 | 3 | ... | 111,823 |

## TABLE II—*Continued.*

| NAME OF COLLIERY. | Character of Coal. (Bituminous or Semi-Bituminous.) | Slope, Shaft, or Drift. | Number of pumps. | Number of engines. | Horse power. | Number of boilers. | Number of miners—men. | Number of miners—boys. | Other employees. | Total employees. | Number of mules inside. | Number of mules outside. | Number of locomotives. | Total production of coal in tons. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mahoning Furnace, | Bituminous, | Drift, | ... | ... | ... | ... | 23 | 2 | 6 | 31 | 3 | 1 | ... | 9,568 |
| Mansfield, | do. (cannel,) | Drift, | 2 | ... | ... | ... | 30 | 2 | 3 | 35 | 2 | 1 | ... | 17.900 |
| M. Graver, | do. | Drift, | ... | 3 | 60 | 3 | 133 | 10 | 35 | 178 | 16 | 6 | 3 | 74,707 |
| Millwood, | do. | Slope and shaft, | 1 | 2 | 90 | 6 | 56 | 5 | 12 | 73 | 8 | | | |
| Monastery, | do. | Slope, | 5 | 3 | 129 | 4 | 90 | 5 | 15 | 110 | 6 | 4 | ... | 82,923 |
| Morewood, A, | do. | Shaft, | 4 | 2 | 36 | 4 | 68 | 4 | 18 | 90 | 7 | | | |
| Morewood, B, | do. | Shaft, | 4 | 1 | 30 | 4 | 100 | 6 | 30 | 136 | 13 | | | |
| M. Saxman, Jr., | do. | Shaft and drift, | 1 | 1 | 80 | 2 | 45 | 3 | 9 | 57 | 6 | ... | 1 | 36 534 |
| Mutual Mining and Manufacturing Company, | do. | Drift, | 1 | ... | ... | 1 | 52 | 4 | 5 | 61 | 4 | 1 | ... | 24 960 |
| Natrona, | do. | Drift, | 1 | 1 | 20 | 1 | 39 | 2 | 13 | 54 | 11 | 2 | ... | 35,238 |
| Northside, | do. | Drift, | ... | 1 | 15 | 1 | 78 | 3 | 22 | 103 | 5 | 2 | ... | 63,851 |
| North Webster, | do. | Drift, | ... | ... | ... | ... | 75 | 3 | 2 | 80 | 5 | ... | ... | 6 113 |
| Oak Hill, No. 4, | do. | Drift, | ... | ... | ... | ... | 190 | 52 | 31 | 273 | 14 | ... | ... | 123 000 |
| Oak Ridge, | do. | Drift, | ... | 1 | 20 | 1 | 40 | 5 | 17 | 62 | 3 | 3 | ... | 2,629 |
| Ocean, | do. | Drift, | ... | ... | ... | ... | 202 | 10 | 34 | 246 | 17 | | ... | 117,250 |
| Penn Gas Coal Shaft, No. 1, | do. | Shaft, | ... | ... | ... | ... | 206 | 22 | 26 | 254 | 18 | 1 | | |
| Penn Gas Coal Shaft, No. 2, | do. | Shaft, | ... | ... | ... | ... | 196 | 20 | 27 | 243 | 15 | 2 | | |
| Penn Gas Coal Drift, No. 4, | do. | Drift, | ... | ... | ... | ... | 183 | 22 | 24 | 229 | 18 | 2 | | |
| Pittsburgh and Kiskiminetas, | do. | Drift, | ... | ... | ... | ... | 52 | 5 | 4 | 61 | 2 | ... | ... | 15,018 |
| Plum Creek, | do. | Drift, | ... | ... | ... | ... | 185 | 53 | 31 | 269 | 19 | | ... | 145 908 |
| Red Bank, | do. | Drift, | ... | ... | ... | ... | 37 | 1 | 9 | 47 | 2 | 1 | ... | 3,232 |
| Rostraver, | do. | Drift, | ... | ... | ... | ... | 106 | 11 | 7 | 124 | 8 | | ... | 6.384 |
| Saltsburg, | do. | Drift, | ... | ... | ... | ... | 125 | 2 | 38 | 165 | 8 | ... | 1 | 93 254 |
| Sandy Creek, | do. | Drift, | ... | ... | ... | ... | 167 | 37 | 54 | 258 | 19 | 3 | ... | 139,476 |
| Shafton, | do. | Shaft, | 2 | 2 | 65 | 4 | 46 | 6 | 20 | 72 | 3 | | ... | 6 784 |
| Southside, | do. | Drift, | 1 | ... | ... | 1 | 281 | 24 | 73 | 378 | 23 | 3 | ... | 244 257 |
| St. Clair, | do. | Drift, | 1 | 1 | 60 | 2 | 48 | 1 | 4 | 53 | 4 | 1 | ... | 3 578 |
| Standard, | do. | Shaft and slope, | 8 | 5 | 213 | 9 | 187 | 13 | 161 | 361 | 20 | 5 | 2 | 194,458 |
| Stewardson Furnace, | do. | Drift, | ... | ... | ... | ... | 17 | 11 | 20 | 48 | 8 | ... | ... | 18,321 |
| Union Coal, | do. | Drift, | ... | ... | ... | ... | 63 | 10 | 10 | 83 | 5 | 1 | ... | 5 390 |
| Union Coal and Coke, | do. | Drift, | ... | ... | ... | ... | 59 | 7 | 11 | 77 | 4 | 1 | ... | 12,741 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| United Shaft, | do. | Shaft, | 1 | ... | ... | .. | 10 | ... | 2 | 12 | | | | |
| Waverly, No. 1, | do. | Drift, | 2 | 2 | ... | 5 | 83 | 5 | 42 | 130 | 8 | 5 | .. | 90,450 |
| Waverly, No. 2, | do. | Drift, | ... | .. | ... | .. | 54 | 3 | 6 | 63 | 3 | 2 | ... | 28,100 |
| Webster, | do. | Drift, | . | ... | . | .. | 65 | 4 | 12 | 81 | 6 | .. | ... | 2,400 |
| Westmoreland, | do. | Shaft, | 2 | 2 | 225 | 4 | 173 | 15 | 44 | 252 | 8 | . | .. | 132,246 |
| West Newton, | do. | Shaft, | 1 | 2 | 18 | 4 | 80 | 7 | 9 | 96 | 5 | 2 | ... | 17 813 |
| West Overton, | do. | Drift, | .. | .. | ... | .. | 32 | .. | 5 | 37 | 4 | 1 | ... | 23 420 |
| Youghiogheny Valley, | do. | Drift, | .. | .. | .. | .. | 108 | 12 | 12 | 132 | 5 | ... | .. | 32 076 |
| Youghiogheny, | do. | Slope, | 2 | 2 | 33 | 2 | 71 | 5 | 7 | 83 | 3 | ... | ... | 17,717 |

**TABLE III.**—*A statement showing the method of ventilation, amount of air discharged, number of openings and headings, and size of inlets and outlets in the respective collieries of the Seeond Bituminous Mine District.*

| Name of Colliery. | How ventilated. | Diameter of fan in feet. | Size of furnace. | Amount of air discharged per minute. | Number of openings. | Number of headings. | Inlet—size of—square feet. | Outlet—size of—square feet. |
|---|---|---|---|---|---|---|---|---|
| Penn Gas Shaft, No. 1, | Fan, | 12 | ....... | 26,000 | 5 | 35 | 51 | 52 |
| Penn Gas Shaft, No. 2, | Fan, | 12 | ....... | 40,000 | 3 | 44 | 58<br>50 | 40 |
| Penn Gas, No. — Mine, | Furnace, | . . | Fire-bed, 56 | 30 600 | 7 | 30 | . . . | 72 |
| Coal Run Mine, | Furnace, | . . . | Fire-bed, 48 | 24 820 | 7 | 35 | 44 | 34 |
| Oak Hill Mine, No. 3, | Furnace, | . . . | 4 x 6 | 9,800 | 3 | . . . | 45 | 45 |
| Oak Hill Mine, No. 4, | Furnace, | . . | 8 x 9 | 32,483 | 4 | 4 | 42<br>45<br>42 | 46 |
| Plum Creek Mine, | Natural, | . | ....... | 20,250 | 8 | 18 | 7½ x7½<br>=56¼ | 56¼ |
| Sandy Creek Mine, | Furnace, | . . | 8 x 25 | 16,320 | 24 | 23 | 48 | 48 |
| Duquesne Mine, | Natural, | . | .... . | 12,000 | 8 | | 40 | 40 |
| Hulme's Mine, | Furnace, | . . . | 22 | 4 000 | 2 | 2 | 23 | 16 |
| Ocean Mine, | Furnace, | . . . | 8 x 26 | 20 000 | 4 | 16 | 48 | 48 |
| Kittanning Mine, | Natural, | . . . | ...... | 4 800 | 3 | 6 | 48 | 48 |
| Mansfield Mine, | Fan and furnace, | . . | ....... | 5,005 | 2 | 1 | 35 | 45 |
| Enterprise Mine, | Natural, | . | ...... | 13 500 | 4 | 2 | 52½ | 56¼ |
| Hampton Mine, | Furnace, | . . | 8 x 8=64 | 14 280 | 2 | 8 | 42 | 40 |
| Webster Coal Works, | Natural, | . | ...... | 7,584 | 3 | 3 | 60 | 42 |
| Rostraver Mine, | Furnace, | | ....... | 12,800 | 4 | 6 | 35 | 40 |
| Millwood Mine, | Fan, | 12 | ....... | 16,800 | 3 | 6 | 50 | 100 |
| Amicville Mine, | Natural, | . . | ........ | 6,720<br>5,760 | 6 | 7 | 48 | 48 |
| Southside Mine, | Furnace, | . | ...... | 37.200 | 4 | 30 | 50 | 51 |
| Larimer Mine, | Natural, | . . | ....... | 4,905<br>6 979 | 4 | 7 | 45 | 45 |
| Westmorcland Shaft, | Fan, | 12 | ........ | 22,600 | 2 | | 48 | 48 |
| Northside Mine, | Natural, | . | ...... | 3,360<br>2,800 | 2 | 3 | 48 | 48 |
| Saxman Mine, | Natural, | . . . | . . . | 8,400 | 3 | 3 | 42 | 42 |
| Saltsburg Mine, | Furnace, | . | 6 x 12 | 10,950 | 3 | 3 | 45 | 45 |
| M. Graver Mine, | Natural, | . | .... | 9,900 | 8 | 3 | 51 | 51 |
| Davidson Mine, | Furnace, | | 4 x 5 | 7,500 | 2 | 1 | 42 | 20 |
| Jones & Watkins, | Furnace, | . | 6 x 8 | 8,400 | 3 | 6 | 42 | 42 |
| Waverly Mine, No. 1, | Furnace, | . . . | 7 x 20 | 19,000 | 3 | 5 | 36 | 64 |
| Waverly Mine, No. 2, | Furnace, | . | 5 x 15 | 10 000 | 2 | 5 | 40 | 36 |
| Armstrong Mine, | Furnace, | | 7 x 7 | 13,000 | 2 | 4 | 33 | 36 |
| Natrona Mine, | Fan, | 6 | . . . | 37,500 | 5 | 5 | 150 | 42 |
| Iron City Mine, | Furnace, | . . | 7 x 7½ | 7 875 | 4 | 3 | 42 | 42 |
| Stewardson Furnace, | Natural, | . . | ...... | 4.896 | 1 | 1 | 24 | 20 |
| Bellview Mine, | Exhaust steam, | . . | ....... | 13,662<br>3,600 | 3 | 2 | 46<br>16 | 37 |
| E. & V. Mine, | Furnace, | . . | .... ... | 17,248<br>6.069 | 3 | 4 | 51<br>49 | 60 |
| Leechburg Mine, | Furnace, | . . | 6 x 10 | 10,500 | 3 | 4 | 48 | 60 |
| Loyalhanna Mine, | Furnace, | . . | 6 x 8 | 14 210<br>13,860 | 3 | 6 | 49<br>42 | 49 |
| Bessemer Mine, | Furnace, | . . | 3½ x 4 | 11,200 | 2 | 4 | 56 | 63 |
| North Webster Mine, | Furnace, | . | 6 x 8 | 6,000<br>10,000 | 3 | 5 | 40 | 48 |
| Mahoning Furnace Mine, | Natural, | . | ....... | 2 500 | 4 | 2 | 35 | 35 |
| Bed Bank Mine, | Furnace, | . | ....... | 10,080 | 2 | 2 | 42 | 40 |
| Barnes Mine, | Natural, | . . | ...... .. | 16,605 | 13 | | 35 | 36 |
| Acbarr Mine, | Furnace, | . | 4 x 9 | 6,325 | 2 | 2 | 42 | 32 |
| Alpsville Mine, | Natural, | . | . . . | 9,000 | 4 | | 72 | 40 |
| Union Coal and Coke Co. Mine, | Two furnaces, | | 4 x 4½<br>5½ x 4 | 16,800 | 4 | 5 | 42<br>20 | 30<br>30 |
| Baker Mine, | Furnace, | . | . . | 10,800 | 2 | | 36 | 42 |
| Burnett Mine, | Furnace, | | 4 x 4 | 3,360 | 2 | 2 | 42 | 20 |
| Cornell & Werling, | Furnace, | . . . | 6½ x 11 | | 4 | 10 | 44 | 42¼ |
| Buckeye Mine, | Natural, | . | . . . | 6,300 | 4 | 3 | 49 | 38 |
| Horner & Roberts, | Furnace, | . . | 7 x 9 | 25,490 | 4 | 10 | 51 | 37 |
| Alice Mine, | Furnace, | . | 7 x 6 | 22,080 | 2 | 5 | 84 | 64 |
| Isabella Mine, | Natural, | . . | .... | 15 960 | 4 | . . | 42 | 42 |
| Eureka Mine, | Furnace, | . . | 4 x 4 | 3,500 | 2 | 4 | 43 | 42 |
| Monastery Mine, | Furnace, | . | 5 x 5 | 15,750 | 2 | 5 | 36 | 63 |
| Milesville Mine, | Furnace, | . . | 7 x 7 | 5,950 | 2 | . . | 35 | 35 |

## TABLE III--Continued.

| Name of Colliery. | How ventilated. | Diameter of fan in feet. | Size of furnace. | Amount of air discharged per minute. | Number of openings. | Number of headings. | Inlet—size of—square feet. | Outlet—size of—square feet. |
|---|---|---|---|---|---|---|---|---|
| Morewood, Shaft A, | Fan, | 16 | ... | 21,200 | 4 | 4 | 56 | 56 |
| Morewood, Shaft B, | Fan, | ... | ... | 20.000 | 4 | 4 | 56 | 56 |
| West Newton, | Fan, | 0 | ... | 9.600 | 2 | 2 | 41½ | 30 |
| Old Eagle Mine, | Furnace, | ... | 6 x 8 | 7,200 | 3 | 4 | 56 | 48 |
| Osceola Mine, | Natural, | ... | ... | 5,000 | 4 | . | 49 | 41 |
| Greensburg Mine, | Exhaust steam, | ... | ... | 24,000 | 3 | 4 | 98 | 42 |
| Franklin Mine. | Furnace, | ... | 4 x 6 | 3 000 | 2 | 2 | 40 | 16 |
| Hazlett, No. 1, | Steam exhaust, | ... | ... | 7 840 | 2 | . | 49 | 42 |
| Hazlett, No. 2, | Natural, | ... | ... | 4,000 | 3 | 5 | 48 | 42 |
| Standard Slope, | Fan, | 6 | ... | 30,000 | 2 | 19 | 40 | 54 |
| Standard Shaft, | Fan. | 6 | ... | 20 096 | 2 | 19 | 50 | 64 |
| Keystone Mine, | Furnace, | ... | 12 x 7 | 12.700 | 26 | .. | 40 | 43 |
| McClosky Road, | Natural, | ... | ... | 8,000 | 11 | .. | 42 | 39 |
| Latrobe Coal Works, | Natural, | ... | ... | 7,920 | 2 | 3 | 72 | 49 |
| West Overton, | Natural, | ... | ... | 5 940 | 5 | 2 | 49 | 36 |
| Winona Mine, | Natural, | ... | ... | 2 730 | 2 | 3 | 40 | 39 |
| Lovedale Mine, | Furnace, | ... | ... | 7,425 | 4 | .. | 41 | 47 |
| Bellevue Mine, | Natural, | ... | ... | 9,000 | .. |  | 40 | 40 |
| Oak Ridge Mine, | Furnace, | ... | ... | 10 080 | 2 | 3 | 48 | 32 |
| St. Clair Mine, | Natural, | ... | ... | 6 300 | 2 | 3 | 48 | 23 |
| Ridgeview Mine, | Natural, | ... | ... | 7,000 | 2 | 2 | 48 | 23 |
| Bagdad Mine, | Natural, | ... | ... | 8.400 | 3 | 3 | 50 | 50 |
| Youghiogheny Slope, | Furnace, | ... | 6 x 8 | 16 300 | 2 | 4 | 48 | 48 |
| Pittsburgh and Kiskiminetas, | Natural, | ... | ... | 6,600 | 3 | 3 | 50 | 50 |
| Union Coal and Coke Co. Mine, | Two furnaces, | ... | 8 x 4 | 8 170 | 3 | 4 | 43 | 40 |
| M. M. & M. Mine, | Natural, | ... | ... | 14,000 | 3 | 5 | 49 | 52½ |

**TABLE IV.**—*Showing an average monthly statement of the ventilation of the respective collieries in the Second Bituminous Mine District, during the year 1882.*

| NAME OF COLLIERY. | JANUARY. | | | | | | FEBRUARY. | | | | | | MARCH. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Alice, | ... | | | .. | | ... | 450 | 29,800 | 110 | 5 390 | 440 | 28 160 | | | | | | |
| Amieville, | 140 | 6,720 | 130 | 6,240 | 130 | 6,240 | 130 | 6,240 | 120 | 5,760 | 130 | 6.240 | 130 | 6 240 | 100 | 4,800 | 140 | 6 720 |
| | 120 | 5,760 | 120 | 5,760 | 100 | 4.800 | 120 | 5.760 | 110 | 5,280 | 100 | 4.800 | 120 | 5,760 | 150 | 7,200 | 100 | 4,800 |
| Arnold, | | | | | | | 180 | 9,000 | | | | | | | | | | |
| Baker, | 300 | 10,800 | 275 | 8,250 | 300 | 12 600 | 300 | 10,800 | 275 | 8,250 | 300 | 12 600 | 300 | 10,800 | 275 | 8 250 | 300 | 12.600 |
| Barnes, | 122 | 15,006 | | .. | 91 | 15,621 | 128 | 15.744 | | | 93 | 15 990 | | | | | | |
| Bellview, | | | | | | | 185 | 8,510 | 83 | 4,731 | 265 | 15.635 | 220 | 10.220 | 95 | 5,415 | 210 | 12.390 |
| Bessemer, | 180 | 7,560 | 130 | 7.280 | 135 | 8,505 | 265 | 11,130 | 170 | 9 520 | 190 | 11,970 | 270 | 11,340 | 185 | 10,360 | 185 | 11,970 |
| Coal Run, | ... | | 125 | 5,625 | | | . | | 210 | 10.500 | | | | | | | | |
| | | 23,800 | 250 | 11 250 | 700 | 23 800 | | 24.820 | 120 | 6,000 | 730 | 24,820 | | | | | | |
| Davidson, | 150 | 6,300 | 125 | 3,750 | 375 | 7 500 | 125 | 5 250 | 187 | 5 610 | 500 | 10.000 | 166 | 7,000 | 214 | 6,428 | 375 | 7,500 |
| Duquesne, | 185 | 7,400 | | ... | 98 | 3 920 | 204 | 8.160 | .. | ... | 127 | 5 080 | 272 | 10,880 | ... | ... | 175 | 7,000 |
| | 156 | 6,240 | ... | .... | 98 | 3.920 | 195 | 7 800 | . | ... | 185 | 7.400 | 214 | 8,560 | ... | .... | 117 | 4.680 |
| | 264 | 10,560 | .. | ... | 175 | 6,000 | 195 | 7,800 | .. | ... | 166 | 6,640 | 331 | 13 240 | ... | . | 204 | 8,160 |
| Enterprise, | ... | .. | ... | ... | . | ... | . | 10,620 | | | | 13,560 | .. | 8 600 | .. | 5.500 | .. | 9,500 |
| Etna and Vesuvius, | ... | ... | ... | ... | . | ... | ... | . | 157 | 8.321 | . | | . | | 165 | 9.340 | | |
| | | | | | | | | | 97 | 5.049 | | | 376 | 19 176 | 195 | 10,725 | 473 | 28,380 |
| | | | | | | | 298 | 15,278 | 182 | 10,010 | 435 | 26,100 | | | | | | |
| Eureka, | .. | | ... | ..... | | | | | .. | ... | | | 170 | 8.330 | 160 | 7,840 | 200 | 7.000 |
| Hampton, | 280 | 11,760 | .. | .... | 310 | 12 400 | 280 | 11,760 | .. | ... | 310 | 12,600 | 290 | 12,180 | ... | .. | 310 | 12.400 |
| Horner & Roberts, | | ..... | .. | .... | | ... | 340 | 17,340 | .. | ... | 475 | 17.575 | | | | | | |
| | | | | | | | 261 | 6,525 | | .... | 170 | 6,120 | | | | | | |
| Hulmes, | 200 | ... | 150 | .. | 500 | ... | 106 | ... | 108 | | 106 | | | | | | | |
| Iron City, | ... | ..... | 125 | 4,517 | | ... | .. | ... | 125 | 4,515 | | .. | . | .. | 130 | 4.702 | | |
| | | .. | 40 | 1,480 | | | | | 40 | 1.480 | | | ... | | 45 | 1,760 | | |
| | 220 | 8 986 | 70 | 2,385 | 200 | 8 188 | 220 | 8,986 | 70 | 2,385 | 200 | 8.188 | 225 | 9.196 | 75 | 2,540 | 205 | 8.256 |
| Isabella, | 355 | 14,910 | ... | | 365 | 15.336 | | | | ... | | . | 355 | 14,910 | ... | .. | 365 | 15 336 |
| Kittanning, | 100 | 4,800 | 100 | 4 800 | 100 | 4,800 | 100 | 4 800 | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Larimer, | . . | 10,710 | | | | 11.900 | . . | . . . | . . . | . . . . | . . | 11,900 | | | | | | |
| Latrobe, | 100 | 8,000 | 90 | 3,780 | 375 | 18 375 | . . | . . . | . . . | . . . . | . . . | | 200 | 9,800 | 120 | 5,880 | 200 | 14,400 |
| | 210 | 7,560 | | | | | | | | | | | | | | | | |
| Leechburg, | 200 | 9,120 | 300 | 14,400 | 250 | 15,000 | 200 | 9,600 | 500 | 24 000 | 280 | 16,800 | 250 | 12,000 | 380 | 16,240 | 300 | 18 000 |
| Loyalhanna, | . . | . . | . | . | . | | 100 | 8 000 | 120 | 5,000 | 300 | 14,700 | 250 | 12.250 | 150 | 6,300 | 250 | 12.250 |
| | | | | | | | | | | | | | 120 | 9,240 | . . . | | 230 | 2 684 |
| Mahoning Furnace, | 100 | 2,500 | | | 100 | 2 500 | | . . | | | | | 100 | 2.500 | | | 100 | 2,500 |
| Mansfield, | 110 | 4 235 | 600 | 3,600 | 100 | 4 500 | 120 | 4,620 | 600 | 3 600 | 110 | 5.005 | 100 | 3,850 | 550 | 3,300 | 100 | 4,550 |
| M. Graver, | 210 | 9.450 | | | 200 | 9,000 | 205 | 9,225 | | . | 210 | 9.450 | 205 | 9 225 | . . . | | 200 | 9 000 |
| Millwood, | 460 | 20,000 | 320 | 12.000 | 410 | 12,500 | 500 | 25,000 | 300 | 10,000 | 400 | 16,000 | 550 | 27,000 | 350 | 12,000 | 450 | 16 000 |
| Mine No. 4, | . . . | . . | 270 | 15.120 | . . . | | . . | . . . . . | 350 | 10.500 | | | . . | . . | 300 | 16,800 | | |
| | | | 220 | 7,920 | | | . . | | 270 | 10, 800 | | | . | | 250 | 10,080 | | |
| | | 28,800 | 300 | 12. 600 | 400 | 28,800 | | 28,800 | 300 | 12,000 | 400 | 28,800 | | 28,800 | 350 | 14.700 | 400 | 28,800 |
| Monastery, | 389 | 21,006 | 85 | 3,570 | 597 | 21,492 | 440 | 23.760 | 150 | 6,390 | 680 | 24 480 | 440 | 23.760 | 180 | 7,560 | 700 | 25,200 |
| Morewood, | | | | | | | | | | | | | 104 | 11.232 | | | | |
| | | | | | | | | | | | | | 122 | 13,176 | . . | . . . | 455 | 18 200 |
| | | | | | | | | | | | | | 108 | 3 510 | | | 395 | 19 750 |
| M. Saxman, | 150 | 6 300 | 180 | . . | 160 | 6,720 | 160 | 6,720 | 250 | 10,500 | 300 | 12 600 | 150 | 6 300 | 140 | 5,880 | 180 | 7.560 |
| Natrona, | 91 | 9,100 | . . . | . . . | 93 | 10,316 | 106 | 10.600 | | | 110 | 12 320 | 93 | 9.300 | . . | . | 111 | 8,325 |
| North Side. | . . . | 3,990 | . . . | . . . . | . | . | . | 3,780 | . . | . . . . . | . . . | 4 150 | | 3,360 | | | | |
| | | 3,200 | . . . | . . . . | . . | . . | . . | 3,200 | . . | . . . . | . . | 3,500 | | 3.600 | | | | |
| North Webster, | . . | . . . . . | . . . | . . . . . | . | . . | | . . . . | | . . . . | . . . | . . | 300 | 6,000 | 200 | 8.000 | | |
| | | | | | | | | | | | | | 250 | 10 000 | 175 | 7.000 | 400 | 19,200 |
| Oak Hill, | . . . | . . . | . . . . | . . . . | . . . | . . . . . | 185 | 8,325 | 162 | 6 804 | | | 174 | 6 328 | 285 | 9,975 | | |
| | | | | | | | 125 | 5 250 | 80 | 2 800 | 350 | 16 100 | 320 | 14,400 | 275 | 9.900 | | |
| | | | | | | | 100 | 4 200 | 160 | 5,600 | 225 | 8,500 | 178 | 7.476 | 210 | 7.350 | 590 | 27,160 |
| Ocean, | | | | . . | | | | | | | | | | 21,400 | | 10,500 | | 20.960 |
| Plum Creek, | 340 | 19,125 | 135 | 6.480 | 370 | 20,812 | 315 | 17,718 | 160 | 7,680 | 340 | 19,125 | 315 | 19 405 | 180 | 8,640 | 360 | 20,247 |
| Red Bank, | . | | 95 | 3. 800 | | | | | | | | | | | | | | |
| | 190 | 7,980 | 95 | 3,800 | 180 | 8 640 | | | | | | | | | | | | |
| Rostraver, | 350 | 12,250 | 255 | 10,200 | 320 | 12,800 | | | | | | | | | | | | |
| Saltsburg, | . | | 145 | 6,525 | | | | | 125 | 6 075 | | | | | 135 | 6,075 | | |
| | 200 | 9,600 | 130 | 6,224 | 220 | 9,900 | 195 | 9,360 | 120 | 5.760 | 210 | 9,450 | 195 | 9,360 | 120 | 5,760 | 210 | 9,450 |
| Sandy Creek, | . . . | | | . . | 99 | 4,320 | 230 | 11.040 | 170 | 8,160 | 140 | 6,720 | | | | | | |
| | 300 | 14 400 | 150 | 7,200 | . . . | | . . | | | | | | 280 | 13,440 | 140 | 6.720 | 110 | 5.280 |
| Shaft No. 1, | | 23 400 | 400 | 20,000 | 500 | 26 000 | | 22.889 | 370 | 18,500 | 440 | 22 880 | | 23 400 | 390 | 19 500 | 450 | 23,400 |
| Shaft No. 2, | 230 | 16.500 | 360 | 13,680 | | | 320 | 16,000 | 310 | 13,640 | | | 330 | 16,500 | 450 | 14 850 | | |
| | 260 | 15.080 | 470 | 15 510 | 800 | 32.000 | 250 | 14 500 | 400 | 15.200 | 800 | 32 000 | 220 | 12.760 | 380 | 14.440 | 800 | 32,000 |
| Shafton, | | 12 600 | . . | 9,720 | . . . | 12 600 | . . | 12 300 | . | 9,720 | . . . | 13 530 | | 10,500 | | 7,560 | | 11.550 |
| South Side, | | 32.994 | | 15 330 | | 36 660 | | 26.300 | | 13 546 | | 29 225 | | 27 145 | | 12 600 | | 30 160 |
| Stewardson Furnace, | 185 | 4 440 | 80 | 3.600 | 200 | 4 000 | 180 | 4.320 | 75 | 3 375 | 190 | 3 890 | 190 | 4 560 | 72 | 3.240 | 198 | 3,960 |
| Waverly, No. 1, | 450 | 16 200 | 230 | 13 200 | 350 | 22.400 | 300 | 10.800 | 230 | 9 200 | 400 | 25.600 | 300 | 10.800 | 210 | 8,400 | 450 | 28,800 |
| Waverly, No. 2. | 100 | 3,600 | . | | 100 | 3.600 | 100 | 3.600 | . . . | | 310 | 3.960 | 120 | 4.320 | . | | 100 | 4 000 |
| Westmoreland, | . . . | | . . | 10 656 | . . . | 10.920 | | 9 800 | . . . | 9,888 | . | 10.920 | . | 9.639 | . . | 9,000 | . . | 10.710 |
| | . | 18,069 | . . | 7,776 | . . . | 9,156 | . | 8 300 | . . . | 8 900 | . . . | 9 240 | . | 7,863 | | 7,088 | | 8 736 |
| West Newton, | . . | | | | | . . | | . | | | . | | 200 | 9,000 | 80 | 2,400 | 300 | 9 000 |
| West Overton, | 54 | 2,646 | 140 | 8,820 | 165 | 5,940 | 55 | 2,695 | 140 | 8,220 | 160 | 5,716 | 52 | 2,518 | 146 | 9,198 | 165 | 5,940 |

## TABLE IV.--VENTILATION OF COLLIERIES—*Continued.*

| NAME OF COLLIERY. | APRIL. | | | | | | MAY. | | | | | | JUNE. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Alice, | 185 | 20,720 | | | | | 185 | 20,720 | 140 | 8,960 | 390 | 24 960 | 165 | 10,560 | 180 | 10,080 | 355 | 22,720 |
| Amieville, | 130 | 6 240 | 130 | 6 240 | 120 | 5,760 | 160 | 7 680 | 140 | 6 720 | 180 | 8,640 | | | | | | |
| | 120 | 5,760 | 130 | 6,240 | 130 | 6 240 | 100 | 4,800 | 120 | 5,760 | 100 | 4,800 | | | | | | |
| Bagdad, | . | | | | | | | . . | | | | | 200 | 8,000 | | . . . . | 200 | 9 600 |
| Baker, | 325 | 11,700 | 250 | 7,500 | 300 | 12,600 | 300 | 10.800 | 275 | 8,250 | 350 | 14.700 | 325 | 11,700 | 275 | 8,250 | 350 | 14.700 |
| Barnes, | 131 | 16,113 | | | 95 | 16,359 | 128 | 15,744 | | | 93 | 15 990 | 131 | 16,113 | | . . . . | 94 | 16,113 |
| Bellview, | 190 | 10,534 | 40 | 5,840 | 239 | 14 101 | 200 | 9,200 | 94 | 5 076 | 189 | 11,151 | | | | | | |
| Bessemer, | 270 | 11,340 | 180 | 10,080 | 185 | 11,655 | 220 | 9,240 | 150 | 8 400 | 150 | 9,450 | 250 | 10,500 | 160 | 8,960 | 190 | 11,970 |
| Burnett, | 90 | 3 780 | . | . . | 150 | 4,785 | | | | | | | | | | | | |
| Coulter & Huff, | . . . . | . . . . . | . . . | . . . . | | . . . . | . . | . . . . . | . . . | . . . . | . . . | . . . . | . | | 160 | 8 640 | | |
| | | | | | | | | | | | | | 125 | 7,000 | 205 | 4.840 | | |
| | | | | | | | | | | | | | 175 | 8 575 | 90 | 3,860 | 180 | 8 820 |
| Duquesne, | 156 | 6 240 | . . | . . . . | 107 | 4,280 | 185 | 7,400 | . . . | . . . . | 117 | 4 680 | 253 | 10,120 | | . . . . | 108 | 4.320 |
| | 185 | 7,400 | . . . | . . . . . | 117 | 4 720 | 137 | 5,480 | . . . | . . . . | 107 | 4,280 | 146 | 5.840 | . . . | . . . . . | 98 | 3,920 |
| | 243 | 9.720 | . . . | . | 156 | 6 240 | 175 | 7 000 | . . . | . . . | 127 | 5,080 | 223 | 8,920 | . . . | . . | 175 | 7.000 |
| Enterprise, | . . . | 10,400 | | 4,720 | . | 9 700 | . . | 10 800 | . . . | . . | . . . | 10,200 | . . . | 11,080 | . . . | 5,400 | . . . | 11,670 |
| Etna and Vesuvius, | . . . | | 211 | 10 339 | | | . . | . | 161 | 7,969 | | | | | | | | |
| | 258 | 13.158 | 255 | 13 260 | 364 | 21,840 | 220 | 11.220 | 239 | 12,428 | 414 | 24 840 | | | | | | |
| Eureka, | 85 | 4,250 | 74 | 4 440 | 200 | 9,600 | 90 | 4.500 | 83 | 4,780 | 134 | 5,628 | | | | | | |
| Franklin, | . . . | | . . . | . . . | | . | . . | | . . . | . . . . | . . . | | 70 | 3 360 | 60 | 2,400 | 80 | 3.200 |
| Hampton, | 300 | 12 600 | . . . | . . . . . | 310 | 12 400 | 300 | 12,600 | . . . | . . . . . | 310 | 12,400 | 280 | 11,760 | . . | . . . . | 310 | 12,400 |
| Horner & Roberts, | 345 | 17,595 | . . . | . . . . . | 480 | 17,760 | 290 | 14 790 | . . . | . . . . . | 380 | 14,060 | | | | | | |
| | 265 | 6,625 | . . | . . | 170 | 6,120 | 255 | 6.275 | . . . | . . . . . | 180 | 6.480 | | | | | | |
| Iron City, | . . . | | 130 | 4,702 | | . . | . . | . | 187 | 4.850 | | | | | | | | |
| | 225 | 9.196 | 75 | 2,540 | 205 | 8.556 | 230 | 9 406 | 80 | 2,735 | 210 | 8.565 | | | | | | |
| Isabella, | 365 | 15,330 | . . . | . . | 360 | 15,120 | 365 | 15,330 | . . . | . . . . . | 375 | 15,750 | | | | | | |
| Kittanning, | . . . . | 4,800 | . . | 4,800 | . . . | 4,800 | | | | | | | | | | | | |
| Larimer, | . . . | . . . . . | . . . | . . . . . | . . . | . . . . . | . . . | . . . . . | . . . | . . . . | . . . | . . . . . | . . . | 5,300 | | | | |
| | | | | | | | | | | | | | | 7.200 | . . . | 7,250 | . . . | 10 200 |
| Latrobe, | 150 | 6,300 | 65 | 3,185 | 130 | 5,460 | . . . | . . . . | . . . | . . . . . | . . . | . . . . . | 100 | 4,900 | 90 | 4,410 | 110 | 7,920 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Loyal Hanna, | | | . . . | . . . | 260 | 12,740 | | | | | | | | | | | | |
| | 280 | 13,720 | | | 130 | 3.900 | 220 | 10 780 | | | 270 | 13 230 | 160 | 7 840 | | | 270 | 12,600 |
| | 130 | 10,010 | 150 | 6.300 | 290 | 3 378 | 130 | 10.010 | 150 | 6 300 | 340 | 6 320 | 180 | 10,800 | 115 | 4 140 | 370 | 6 660 |
| Leechburg, | 250 | 12,000 | 450 | 21,600 | 320 | 19,200 | 250 | 12.000 | 400 | 19,200 | 300 | 18 000 | 230 | 13 440 | 440 | 21,120 | 320 | 19 200 |
| Mansfield, | 110 | 4 235 | 550 | 3,300 | 100 | 4,550 | 100 | 3.850 | 600 | 3,600 | 100 | 4,550 | 90 | 3.465 | 600 | 3,600 | 100 | 4.500 |
| M. Graver, | 215 | 9,675 | | | 205 | 9,225 | 205 | 9.225 | | | 210 | 9 450 | 185 | 8 325 | | | 190 | 8.550 |
| Millwood, | 300 | 12,000 | 250 | 9.000 | 400 | 15,000 | 400 | 17,000 | 300 | 10.000 | 450 | 13 000 | 300 | 15 000 | 300 | 10,000 | 300 | 12,000 |
| Mine No. 4, | . | . . | 290 | 16,140 | | | . | | 280 | 15 680 | | | | | 280 | 15.680 | | |
| | | | 300 | 10,800 | | | . . | | 290 | 10 440 | | | . . | | 300 | 10,800 | | |
| | | 27,360 | 340 | 14,280 | 380 | 27,360 | | 28 800 | 300 | 12.600 | 425 | 30.600 | | 27,520 | 330 | 13.860 | 400 | 28.800 |
| Monastery, | 385 | 20.790 | 210 | 8 820 | 673 | 24,228 | 300 | 18.900 | 180 | 7.560 | 550 | 19 800 | 240 | 15,120 | 210 | 7,560 | 420 | 15 120 |
| Morewood, | 648 | 24,624 | 45 | 2,475 | 240 | 10.320 | 112 | 5.152 | | | 270 | 9.720 | 100 | 5,600 | 100 | 5.600 | | |
| | 170 | 6,820 | 60 | 3.000 | 180 | 9,900 | 102 | 6,630 | . . | . . . | 185 | 7,770 | 155 | 8,060 | 80 | 5 120 | 325 | 11 700 |
| | 90 | 5 850 | 100 | 6,270 | 260 | 7.800 | 120 | 5 520 | . . | . . . . . | 245 | 11,760 | 240 | 13,440 | 130 | 4 680 | 157 | 10,048 |
| M. Saxman, | 160 | 6,720 | 140 | 5,880 | 190 | 7.950 | | | | | | | | | | | | |
| Natrona, | 72 | 7,200 | . . . | . . . . . | 60 | 4,500 | 71 | 10.650 | | . . . | 137 | 10.275 | 77 | 7.700 | . | . . | 65 | 4,875 |
| Northside, | . . | 3,570 | . | . . | | 3,920 | | 2,000 | . | . . . | | 2 700 | . . | 2 620 | . | . . . | | 2.920 |
| | | | | | | | | 2.520 | | | . . | 2,200 | | 2.880 | | . | . . | 3 200 |
| Oak Hill, No. 4, | 100 | 4,200 | 180 | 6 840 | | . . | 165 | 7,325 | 180 | 6,840 | . | | 160 | 6.720 | 175 | 6,650 | | |
| | 221 | 9 905 | 195 | 6 420 | | | 215 | 9,775 | 195 | 7,020 | . | | 175 | 7,675 | 165 | 5 940 | | |
| | 177 | 7,142 | 175 | 6 300 | 800 | 36,800 | 75 | 3,150 | 150 | 6,300 | 580 | 26,680 | 140 | 5,880 | 153 | 6,466 | 680 | 31.250 |
| Ocean, | | . . | . . | | | . | | | | | | | | 18,000 | | 14 500 | | 18 250 |
| Pittsburgh and Kiskiminetas, | | | | | | | | | . | | | | 150 | 6.100 | | | 200 | 3 500 |
| Plum Creek, | 380 | 20,375 | 231 | 11,088 | 390 | 20,937 | 375 | 21,000 | 235 | 11.280 | 380 | 20,375 | 325 | 18 321 | 215 | 10,320 | 350 | 19.687 |
| Red Bank, | . . | | | | . . . | . | 190 | 7,980 | 150 | 6 000 | 170 | 8,640 | 150 | 6,300 | 160 | 6.400 | 140 | 7 720 |
| Saltsburg, | | . | 135 | 6,075 | | | | | 130 | 5.850 | | | 140 | 5 880 | 205 | 8.610 | | |
| | 200 | 9,600 | 125 | 6,000 | 215 | 9 675 | 190 | 9 120 | 120 | 5 760 | 205 | 9 225 | 75 | 2 925 | 90 | 4.050 | 205 | 9 225 |
| Sandy Creek, | 340 | 16,320 | 180 | 8.640 | 100 | 4 800 | 350 | 16.800 | 160 | 7.680 | 120 | 5 760 | 320 | 15.360 | 190 | 9,120 | 120 | 5 760 |
| Shaft No. 1, | | 23,400 | 410 | 20,500 | 450 | 23,400 | | 23 400 | 380 | 19.000 | 470 | 24 440 | | 23.400 | 400 | 20.000 | 450 | 23,400 |
| Shaft No. 2, | 300 | 15.000 | 440 | 14 520 | | | 200 | 13 920 | 440 | 16 720 | | | 320 | 16,000 | 370 | 14.060 | | |
| | 220 | 12,760 | 430 | 16 340 | 900 | 36,000 | 300 | 13 000 | 500 | 16,500 | 900 | 36 000 | 200 | 11.600 | 470 | 15 510 | 770 | 30 800 |
| Southside, | | 31,590 | | 15.750 | | 35.100 | | 30.420 | | 16 800 | | 33 800 | | 29 250 | | 14 910 | | 32.500 |
| Standard, | 320 | 17,920 | 310 | 14.880 | 360 | 25.920 | 166 | 16 000 | 260 | 12 000 | 390 | 17 500 | 190 | 16,910 | 250 | 14.250 | 290 | 22 620 |
| Stewardson Furnace, | 2 0 | 4.800 | 90 | 4.050 | 190 | 3 800 | 194 | 4.656 | 70 | 3.150 | 190 | 3,800 | 194 | 4 656 | 68 | 3 060 | 196 | 3 920 |
| Waverly, No. 1, | 300 | 10,800 | 250 | 10.000 | 500 | 32,000 | 400 | 14.400 | 240 | 9 600 | 400 | 26,000 | 300 | 10,800 | 250 | 10 000 | 450 | 28 800 |
| Waverly, No. 2, | 230 | 8.280 | 80 | 2 880 | 200 | 7,200 | 150 | 6.000 | 100 | 4 000 | 250 | 9 000 | 200 | 8,000 | 150 | 6 000 | 250 | 9.000 |
| Westmoreland, | . . | 14.520 | . . | 13,950 | | 15,104 | | 10 125 | . . | 10.368 | | 11.250 | | | | 12 250 | | 10.090 |
| | | 12,150 | . | 11,300 | | 13,000 | | 9,110 | | 9,000 | . | 10,125 | | 23 970 | . | 9,016 | | 13 700 |
| West Newton, | 260 | 10.140 | 80 | 7.440 | 200 | 10,790 | 170 | 5,100 | 120 | 3,600 | 200 | 6,000 | 140 | 4,200 | 80 | 2,400 | 160 | 4,800 |
| West Overton, | 54 | 2,646 | 140 | 8.220 | 165 | 5,940 | | | | | | | | | | | | |

## TABLE IV.—VENTILATION OF COLLIERIES.—*Continued.*

| NAME OF COLLIERY. | JULY. | | | | | | AUGUST. | | | | | | SEPTEMBER. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Alice, | .. | .... | 150 | 9,600 | ... | .... | .. | .... | 180 | 10,080 | ... | .... | ... | .... | 160 | 8,960 | | |
| | | | 190 | 12,160 | | | . | | 215 | 12,040 | ... | ... | | . | 160 | 8,960 | | |
| | 275 | 23.100 | 315 | 20.160 | 340 | 21,760 | 240 | 20,160 | 216 | 14,560 | 350 | 22,400 | 230 | 19,320 | 210 | 11,760 | 320 | 20,480 |
| Amleville, | 120 | 5,760 | 120 | 5,760 | 200 | 9.600 | | | | | | | | | | | | |
| | 100 | 4,800 | 80 | 3,840 | 100 | 4,800 | | | | | | | | | | | | |
| Bagdad, | | | | | | | 110 | 8,800 | ... | .... | 120 | 7,200 | 100 | 4,000 | | .. | 120 | 4,800 |
| Baker, | 325 | 11,700 | 275 | 8,250 | 375 | 15,750 | | | .. | .... | . | | 300 | 10.800 | 250 | 7,500 | 350 | 14,700 |
| Barnes, | | | ... | .. | | . | 130 | 16,539 | | .. | 96 | 16,605 | 135 | 16 605 | . | .. | 93 | 15.990 |
| Bessemer, | 250 | 10 500 | 150 | 8,400 | 190 | 11.970 | 265 | 11.130 | 150 | 8,400 | 195 | 12,285 | 200 | 11.200 | 150 | 8,500 | 190 | 11,970 |
| Coulter & Huff, | 270 | 13,150 | 220 | 10,560 | 270 | 9.720 | 250 | 11,250 | 120 | 5,760 | 275 | 9,900 | 400 | 22,400 | .. | .... | 550 | 23,100 |
| Enterprise, | | 11,800 | | | | 11.200 | .. | 13,400 | ... | .... | ... | 13,400 | ... | 10,300 | .. | .... | ... | 11,500 |
| Franklin, | 78 | 3,120 | 67 | 2,680 | 74 | 2 960 | | | | | | | | | | | | |
| Hampton, | 360 | 15,100 | ... | .... | 370 | 14,800 | .. | | ... | .... | | . | 320 | 13,440 | ... | .... | 310 | 12,400 |
| Horner & Roberts, | . | | ... | ... | 310 | | 300 | 15,300 | ... | .... | 320 | 11,840 | 290 | 14,790 | ... | .... | 250 | 9,250 |
| | | 19,190 | ... | ... | 220 | 19,170 | 140 | 5,600 | ... | .... | 240 | 8,400 | 90 | 3,600 | | | 290 | 8,990 |
| Iron City, | ... | .... | ... | .... | . | .. | ... | .... | ... | .... | ... | ... | . | | 125 | 4.517 | | |
| | | | | | | | | | | | | | 225 | 9,196 | 70 | 2,385 | 210 | 8,566 |
| Isabella, | 340 | 14,280 | ... | .... | 350 | 14,700 | .. | | ... | ... | .. | .. | 335 | 14,070 | .. | .... | 345 | 14,490 |
| Larimer, | ... | 3,456 | ... | .... | . | | ... | 3,600 | .. | .... | ... | 2,962 | ... | 1,836 | .. | .... | .. | 5,744 |
| | | 1,974 | ... | .. | | 5.580 | | 1,512 | .. | | | 4,815 | | 3,744 | .. | . | . | 2,962 |
| Latrobe, | 110 | 5,390 | 90 | 4.410 | 100 | 4.900 | 110 | 5,390 | 90 | 4,410 | 100 | 7,200 | 110 | 5,390 | 80 | 3,920 | 90 | 6,480 |
| Leechburg, | 300 | 14,400 | 500 | 24,000 | 370 | 22.200 | 180 | 8,640 | 200 | 9,600 | 200 | 12,000 | 270 | 12,960 | 280 | 13,440 | 280 | 16,800 |
| Loyalhanna, | ... | . | . | .. | 280 | 10.080 | | . | .. | ... | .. | | 180 | 8.820 | ... | .. | 240 | 8,640 |
| | 200 | 980 | | | 240 | 4.320 | 170 | 8,330 | | . | ... | 12,250 | 180 | 6,480 | .. | | 320 | 5,760 |
| | 130 | 10,010 | 115 | 4,830 | 96 | 4,704 | 140 | 10,780 | 115 | 5,635 | | 6,480 | 120 | 4,320 | 115 | 4,830 | 80 | 2,880 |
| Mahoning Furnace, | ... | . | | | | . | 150 | 4,500 | | | 150 | 4.500 | | | | | | |
| Mansfield, | 100 | 3.850 | 700 | 4,200 | 100 | 4,500 | 100 | 3 800 | 600 | 3,600 | 100 | 4.500 | 90 | 3,465 | 450 | 2,700 | | 4 095 |
| M. Graver, | 205 | 9,225 | | | 200 | 9,000 | 200 | 9.000 | | | 200 | 9,000 | 200 | 9,000 | .. | | 200 | 9.000 |
| Millwood, | 300 | 15,000 | 300 | 10,000 | 300 | 12,000 | 440 | 22,000 | 300 | 10,000 | 340 | 13.600 | 380 | 19,000 | 300 | 10,000 | 340 | 13,600 |
| Monastery, | 360 | 12,900 | 200 | 7,200 | 220 | 13,860 | 350 | 12,600 | 220 | 7,920 | 210 | 13,230 | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Morewood, A, | 245 | 13,750 | 80 | 4,480 | 320 | 11,520 | 201 | 11,256 | 54 | 3 024 | 280 | 10,086 | 98 | 5,488 | 43 | 2.408 | 153 | 5,508 |
| | 190 | 10,640 | 60 | 3,360 | 310 | 11,160 | 230 | 12,880 | 60 | 3 360 | 260 | 9,360 | 140 | 7.840 | 73 | 4 080 | 160 | 5.760 |
| | 200 | 11,200 | 65 | 3,640 | 340 | 12,240 | 73 | 9,758 | 42 | 2,350 | 250 | 9.000 | 117 | 6,552 | 50 | 3,200 | 180 | 6,480 |
| Morewood, B, | ... | .. | 120 | 4,320 | 260 | 14,560 | 113 | 6,328 | 180 | 8.840 | 160 | 8 960 | 93 | 5,208 | 130 | 7,280 | 143 | 8,008 |
| | | | 112 | 4,012 | 240 | 13,440 | 130 | 7.280 | 172 | 8,288 | 150 | 8,400 | 140 | 7,840 | 131 | 7,336 | 207 | 11,592 |
| | 263 | 9,468 | 135 | 4,860 | 215 | 12,010 | 135 | 7,560 | 130 | 6,370 | 145 | 8,110 | 100 | 5,600 | 93 | 3,806 | 140 | 7,840 |
| Natrona, | 67 | 6,700 | ... | .. | 102 | 7.650 | 66 | 4,700 | . | .... | 109 | 12.412 | 95 | 9,500 | ... | .. | 110 | 8,250 |
| Northside, | ... | 2,640 | ... | ..... | | 2,700 | . | 2,300 | ... | ..... | ... | 2 520 | .. | .... | .. | ... | .. | 2,940 |
| | | 2,430 | .. | .... | .. | 2,940 | | 2 340 | | . | .. | 2,600 | .. | .... | .. | .... | .. | 2,400 |
| Oak Hill, | ... | ..... | .. | ..... | ... | ..... | 160 | 6.720 | 204 | 7.752 | | | | | | | | |
| | | | | | | | 215 | 9,675 | 180 | 6,480 | | | | | | | | |
| | | | | | | | 145 | 6,090 | 165 | 6,930 | 640 | 29,440 | | | | | | |
| Ocean, | ... | 19,750 | . | 16 300 | | 19,900 | | 22,450 | . | | | 22,650 | .. | 20,430 | ... | .. | ... | 20.650 |
| Penn, No. 1, | . | 24,440 | 420 | 21,000 | 450 | 23,400 | | 26,000 | 400 | 20,000 | 500 | 26,000 | | 24,960 | 380 | 19,000 | 480 | 24,960 |
| Penn, No. 2, | 210 | 12,180 | 400 | 15 200 | | | 200 | 11,600 | 385 | 14 630 | . . | | 350 | 17,500 | 430 | 14,190 | | |
| | 350 | 17,500 | 450 | 14,850 | 800 | 32,000 | 260 | 13,000 | 400 | 13.200 | 700 | 28 000 | 220 | 12,760 | 310 | 13,020 | 760 | 30,400 |
| Penn, No. 4, | .. | ..... | 300 | 16,800 | . | .. | ... | ... | 200 | 11,200 | .. | . | ... | . | 300 | 16,800 | | |
| | | | 280 | 10,080 | | | . | | 320 | 11,520 | | | .. | | 300 | 10,800 | | |
| | | 30,600 | 375 | 15,750 | 425 | 30,600 | | 24,480 | 300 | 12,600 | 340 | 24,480 | | 28.800 | 325 | 13,650 | 400 | 28,800 |
| Pittsburgh and Kiskiminetas, | ... | .... | . | .... | . | .... | 130 | 8.000 | | | 120 | 7,200 | 140 | 5,600 | | .... | 110 | 4,400 |
| Plum Creek, | ... | .... | ... | .... | ... | .... | 315 | 17 718 | 225 | 10.800 | 380 | 21,375 | | | | | | |
| Red Bank, | ... | .... | ... | .... | ... | .. | 190 | 7.980 | 140 | 5,600 | 170 | 8,760 | | | | | | |
| Saltsburg, | ... | .... | ... | ... | ... | ... | 150 | 6.750 | 200 | 8,400 | | | 160 | 7,200 | 170 | 7,140 | | |
| | | | | | | | 60 | 2,340 | 80 | 3,600 | 220 | 9,900 | 50 | 1,950 | 80 | 4,000 | 225 | 10,125 |
| Sandy Creek, | ... | | ... | | ... | | 300 | 14,400 | 170 | 8,160 | 110 | 5,280 | | | | | | |
| Southside, | . | 33,460 | . | 18,680 | . | 37,180 | | 29.750 | | 14,650 | | 33.020 | | 29,200 | . | 32,500 | | 13.230 |
| Standard, | 390 | 21,000 | 220 | 10,780 | 190 | 15 960 | 290 | 22.620 | 220 | 10.780 | 270 | 22,680 | 190 | 16,910 | 250 | 12,250 | 290 | 22,620 |
| Stewardson Furnace, | 192 | 4.608 | 64 | 2,880 | 188 | 3 760 | 200 | 4,800 | 68 | 3,060 | 198 | 3,960 | 196 | 4,704 | 68 | 3,060 | 188 | 3,760 |
| St. Clair, | 50 | 3,000 | . | | 40 | 2,300 | | | | | | | | | | | | |
| Waverly, No. 1, | 300 | 10,800 | 200 | 8,000 | 400 | 25,600 | 300 | 10,800 | 220 | 8 800 | 450 | 28 800 | 300 | 10.800 | 220 | 8,800 | 400 | 25,600 |
| Waverly, No. 2, | 250 | 10,000 | 180 | 7,200 | 300 | 12,000 | 250 | 10,000 | 150 | 6 000 | 300 | 10,800 | 200 | 8 000 | 150 | 6,000 | 250 | 9,000 |
| Westmoreland, | ... | | | 9,050 | .. | 10,500 | . | | . | 9,000 | . | 11 000 | . | 10.900 | | 9,180 | .. | 12,124 |
| | | 19,350 | ... | 10,150 | .. | 11,000 | | 19.900 | | 9,080 | | 11,160 | . | 11,350 | ... | 10,025 | ... | 12,500 |
| West Overton, | ... | . | .. | | ... | | 54 | 2,646 | 142 | 8,956 | 165 | 5 940 | | | | | | |
| Youghiogheny, | ... | 8,160 | ... | 7,460 | . | 9,760 | .. | 3,600 | .. | 2,725 | ... | 5,580 | .. | 12,000 | ... | 6,120 | ... | 24,000 |

## TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

| NAME OF COLLIERY. | OCTOBER. | | | | | | NOVEMBER. | | | | | | DECEMBER. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Alice, | . . | . . . . | 210 | 11 760 | | | | | | | | | | | | | | |
| | | | 340 | 19,040 | . | . . | | | 250 | 14 000 | | | | | 260 | 14,560 | | |
| | 270 | 22,680 | 330 | 18 480 | 330 | 21,120 | 250 | 21,000 | 250 | 14,000 | 355 | 20 160 | 230 | 19,320 | 270 | 15 120 | 275 | 17 600 |
| Acbarr, | . . . | . . | . . . | . . | | | . . . | . . | . . | . . . . . | . . | . . . . | | | 225 | 8,970 | | |
| | | | | | | | | | | | | | 82 | 3.525 | 230 | 9,150 | 198 | 6 325 |
| Bagdad, | 90 | 7.200 | . | | 105 | 7 000 | . . . | . . | | | . | | 110 | 8 800 | | | 120 | 7,700 |
| Baker, | 275 | 9,900 | 225 | 6,750 | 325 | 13,650 | 275 | 9,900 | 225 | 6,750 | 325 | 13,650 | 300 | 10,800 | 225 | 6,750 | 325 | 13.650 |
| Barnes, | . . . | | . | | | | 136 | 16,728 | | | 97 | 16,728 | 139 | 17.097 | | | 99 | 17,097 |
| Bellview, | 211 | 9 706 | 75 | 2.775 | | | 207 | 9,522 | 139 | 5 042 | | | 202 | 9 292 | 165 | 6,930 | | |
| | 154 | 2,464 | 183 | 6 771 | 390 | 12,091 | 148 | 2 568 | 76 | 2 812 | 304 | 11.248 | 226 | 3,616 | 66 | 2,178 | 332 | 12,284 |
| Bessemer, | 205 | 11,480 | 150 | 8,400 | 200 | 12 600 | 205 | 11.480 | 150 | 8,400 | 200 | 12 600 | 200 | 11,200 | 150 | 8,400 | 195 | 12,285 |
| Duquesne, | 273 | 10,920 | . . | . . . . | 127 | 5 080 | 273 | 10.920 | . . | . . | 127 | 5,080 | | | | | | |
| | 214 | 8,560 | . . . | . . . . | 117 | 4,680 | 160 | 7,240 | . . . | . . . . . | 80 | 3.720 | | | | | | |
| | 263 | 10 520 | . . . | . . . . | 185 | 7 420 | 137 | 5,480 | . . . | . . . . | 98 | 3,920 | | | | | | |
| Enterprise, | . . | 12 600 | . . | | . . . | 12 700 | . | 13,500 | | | . . . | 13,100 | . . . | 15 600 | . . . | . . . . | . . | 15,000 |
| Etna and Vesuvius, | . | | 139 | 11,120 | . . . | | . | | 144 | 11 960 | | | | | | | | |
| | 95 | 4,845 | 85 | 4 590 | | | 148 | 4 539 | 144 | 7 632 | | | 130 | 6,630 | 181 | 14.480 | | |
| | 328 | 10,491 | 216 | 11,880 | 405 | 24 300 | 338 | 20.580 | 95 | 5,130 | 391 | 23,460 | 365 | 17,885 | 140 | 7,560 | 430 | 25.800 |
| Hampton, | | 12 600 | . . . | | 310 | 12,400 | 310 | 13,020 | . . . | . . . . . | 320 | 12.800 | 340 | 14,280 | . . . | . . | 350 | 14,000 |
| Horner & Roberts, | 310 | 15,810 | . . . | . . . . | 270 | 9,990 | 110 | 4,400 | . . | . . . . . | 280 | 10.360 | 390 | 19,890 | . . | . . . . | 375 | 13 875 |
| | 105 | 4,200 | | . . . . | 320 | 9,920 | 315 | 16,065 | | . . . . | 315 | 9,765 | 140 | 5,600 | | . . . . | 355 | 11,005 |
| Hulme's, | 500 | . . | 350 | | 800 | | 400 | . . . | 300 | . . . . | 600 | . . . | 500 | . . . . | 400 | . . . | 700 | |
| Iron City, | . . . | . | 40 | 2 730 | | | | | | | | | | | | | | |
| | 140 | 7.875 | 35 | 2,701 | 130 | 7,470 | | | | | | | | | | | | |
| Isabella, | . . . | | . . . | . | . . . | . . | 355 | 14 910 | . . . | . . . | 360 | 15,120 | 370 | 15.540 | . | | 380 | 15,960 |
| Kittanning, | . . . | 4 800 | . . . | 4,800 | . | 4,800 | . . . | | . . . . | . . . . . | | | 70 | 3.360 | 60 | 2,880 | 70 | 3.360 |
| Larimer, | . . . | 3,504 | . . . | | . . . | 3,780 | . . | 3,780 | . . . | | . . . | 4 656 | | 4,905 | | | . | 5.152 |
| | | 2,898 | | 5,166 | | 3.431 | | 2.444 | | 5 040 | | 2,852 | | 6,979 | | 8,878 | | 6 336 |
| Latrobe, | 120 | 5,850 | 90 | 4 410 | 100 | 7,200 | 110 | 5.390 | 100 | 4 900 | 120 | 8.640 | 100 | 7.200 | 90 | 4,410 | 150 | 7.350 |
| Leechburg, | 180 | 8 640 | 380 | 8 240 | 240 | 14,400 | 2,0 | 12,960 | 230 | 11,040 | 280 | 16,800 | 220 | 10,500 | 250 | 12,000 | 260 | 15,600 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lovedale, | . . . | . . . . | . . . | . . . . | . . . | . . . . | 200 | 8.200 | . . . | . . . . | 137 | 6.579 | | | | | | |
| | | | | | | | 175 | 7,125 | . . . | . . . . | 160 | 6.560 | | | | | | |
| Loyalhanna, | 200 | 9,800 | | | | | | | | | | | | | | | | |
| | 120 | 9 240 | . | . . . | . . . | 11.760 | . | . . . . | . . | . . . . | . . . | . . . | 290 | 14,210 | | . . . | 275 | 11,550 |
| | 90 | 3,780 | 180 | 7,560 | . . . | 4 149 | . | . . . | . . . | . . . | . . | . . . . | 180 | 13,860 | 160 | 6,720 | 300 | 3,750 |
| Mahoning Furnace, | | 2 500 | | | | 2,500 | | | | | | | | | | | | |
| Mansfield, | 100 | 3,850 | 650 | 3,900 | 100 | 4,550 | 100 | 3 850 | 600 | 3,600 | 100 | 4,550 | 110 | 4,235 | 600 | 3,600 | 100 | 4.550 |
| M. Graver, | 205 | 9,225 | . . . | . | 210 | 8,450 | 210 | 9 450 | . | | 210 | 9,450 | 210 | 9,450 | . | . | 205 | 9,225 |
| Millwood, | 420 | 21 000 | 250 | 10,000 | 340 | 13,600 | 420 | 21,200 | 60 | 6,800 | 360 | 14 400 | 480 | 24,000 | 80 | 8,000 | 400 | 16 000 |
| Monastery, | 400 | 14,400 | 230 | 8 280 | 250 | 15,750 | | | | | | | | | | | | |
| Morewood, B, | | . . . | 110 | 6 160 | 170 | 9.520 | | | | | | | | | | | | |
| | | | 180 | 10.680 | 100 | 5.600 | | | | | | | | | | | | |
| | 195 | 10.920 | 175 | 9,800 | 180 | 10 696 | | | | | | | | | | | | |
| M. Saxman, | | . . | | | | | 180 | 7 560 | 170 | 7,140 | 220 | 9 240 | 200 | 8.400 | 170 | 7,140 | 225 | 9,450 |
| Mutual Mining and Manufacturing Company, | 200 | 10,000 | 40 | 2,000 | 160 | 8,000 | 250 | 14,000 | 150 | 9.000 | 400 | 8,000 | 300 | 16 800 | 150 | 9,000 | 400 | 800 |
| Natrona, | | | . . . | . . . . . | . . . | . . . . . | . | . . . . . | 126 | 18 900 | . . | | . | . . | 150 | 15,000 | | |
| | 299 | 44,850 | 174 | 17,400 | 705 | 52,875 | 350 | 35,000 | 173 | 17,300 | 750 | 56,250 | 350 | 52.500 | 102 | 15,300 | 1,000 | 37,500 |
| Northside, | . . . | 3 360 | . . . | . . . | | . . . | | 3,360 | | . . | . . | . . | | 3,360 | . | . . | . . . | 3,390 |
| | | 3 000 | | | . | . . | . . . | 3,000 | . | . . . | . . | . . . | . | 2 800 | . . | . . . | . . . | 3,000 |
| North Webster, | 350 | 7,000 | 250 | 10,000 | | | | | | | | | | | | | | |
| | 350 | 7,000 | 350 | 14,000 | 600 | 28,000 | | | | | | | | | | | | |
| Oak Hill, No 4, | 125 | 5 250 | 225 | 9,450 | . . . | . | 152 | 6 384 | 180 | 7,920 | . . . | . . | 152 | 6 384 | 185 | 8,140 | | |
| | 300 | 13,500 | 215 | 2,580 | | | 185 | 8.325 | 160 | 6 920 | | | 185 | 8.325 | 182 | 7,644 | | |
| | 180 | 7,560 | 228 | 6,004 | 685 | 31,500 | 170 | 7,140 | 175 | 7.350 | 632 | 29.070 | 170 | 7,140 | 195 | 8,190 | 700 | 32,200 |
| Oak Ridge, | . . | | . . . | . . . . . | | | 200 | 10,400 | 120 | 5,040 | 213 | 10.437 | | | | | | |
| Ocean, | . . . | 19.600 | . . | . . | . | 19 700 | | 20,500 | | | | 20,900 | . . | 20.150 | | | | 20,550 |
| Penn, No. 1, | | 24 400 | 400 | 20.000 | 500 | 26,000 | | 24 960 | 370 | 18,500 | 450 | 23,400 | | 24 440 | 400 | 20,000 | 470 | 24 440 |
| Penn, No. 2, | 350 | 17,500 | 550 | 18 150 | | | 350 | 17 500 | 400 | 16,800 | | | 300 | 17,400 | 565 | 18.645 | . | . . . |
| | 200 | 11,600 | 320 | 13 440 | 970 | 38 800 | 300 | 17,400 | 560 | 18,480 | 960 | 38,400 | 400 | 20,000 | 430 | 17,845 | 1,000 | 40,000 |
| Penn, No. 4, | . . | . . . . . | 300 | 16 800 | | | | | 300 | 16 800 | | | | | | | | |
| | | | 200 | 7 200 | . . . | . . . | . | | 290 | 10,440 | | . . | . | | 325 | 18,200 | | |
| | | 28,800 | 370 | 15,540 | 400 | 28.800 | . | 28 800 | 300 | 12 600 | 420 | 30 240 | | 30 600 | 250 | 9,000 | 425 | 30.600 |
| Pittsburgh and Kiskiminetas, | 100 | 8 000 | | | 90 | 7.200 | | | | | | | 100 | 6.000 | | | 110 | 6,600 |
| Plum Creek, | 320 | 18 000 | 215 | 10 320 | 380 | 21,374 | 340 | 19.040 | 175 | 8 400 | 350 | 19 687 | 345 | 19.403 | 175 | 8 400 | 370 | 20 812 |
| Red Bank, | 200 | 8,400 | 195 | 7.800 | 250 | 9,000 | 250 | 10,500 | 190 | 7,600 | 230 | 9,200 | 240 | 10,080 | 200 | 8 000 | 250 | 10,000 |
| | | | | | | | | | | | | | | | 190 | 7 600 | | |
| Saltsburg, | 150 | 6,750 | 195 | 8,190 | | . . . . | 160 | 7 200 | 200 | 8.400 | | | 195 | 8 325 | 140 | 5 880 | | |
| | 75 | 2,925 | 100 | 4,500 | 230 | 10 350 | 80 | 3,120 | 60 | 2 700 | 250 | 11 250 | 45 | 1,755 | 85 | 3.825 | 235 | 10,575 |
| Sandy Creek, | 330 | 15,840 | 150 | 7,200 | 110 | 5 280 | 320 | 15 360 | 110 | 5 280 | 100 | 4.800 | 340 | 16.320 | 190 | 9 120 | 140 | 6,720 |
| Standard, | . . . | . . . . . | . . . . | . . | | | 280 | 14 250 | 226 | 10,848 | 313 | 16,900 | 350 | 17.500 | 290 | 15,660 | | 20,096 |
| Stewardson Furnace, | 202 | 4 848 | 72 | 3 240 | 204 | 4 080 | 202 | 4 848 | 68 | 3 060 | 203 | 4,060 | 204 | 4 896 | 68 | 3.060 | 202 | 4 060 |
| Southside, | . | 32 058 | . . | 15,035 | | 35,620 | | 36,900 | | 17 025 | | 41 080 | | 37,200 | . . | 17,100 | . | 41,360 |
| Union Coal and Coke, | . . . | 42,000 | . . . | 26,000 | | 30,000 | | 76 000 | | 25,000 | | 25,000 | | | | | | |
| Waverly, No. 1. | 300 | 10 800 | 230 | 9 200 | 450 | 28,800 | 400 | 14.400 | 250 | 10,000 | 400 | 25 600 | | | | | | |
| Waverly, No. 2, | 250 | 10,000 | 190 | 7.600 | 300 | 10.800 | 250 | 10.000 | 150 | 6 000 | 300 | 10 800 | | | | | | |
| Westmoreland, | | | . . | 8 640 | . . | 12,625 | | 10 800 | . | 9,240 | | 12,024 | . . | | . . . | 10,050 | . . . | 12.080 |
| | | 23,960 | . . | 12,800 | . . | 14,000 | . | 10,080 | . | 9,120 | . | 11 200 | | 22 680 | | 11.760 | | 13 040 |
| West Overton, | . . | | . . . | | . . . | | . . . | | . . . | | . | | 57 | 2,793 | 142 | 8.956 | 165 | 5,940 |
| Youghiogheny Slope, | . . . | 11.800 | . . . | 5.890 | . . . | 23 400 | . . | 12,600 | . . | 6,200 | . . . | 24,300 | . | 15,200 | . . | 12 300 | . . . | 24 000 |
| Union Coal and Coke Company, (Limited,) | . . . | 72,000 | . . . | 30,000 | . . | 62,000 | | | | | | | | | | | | |

**LIST OF ACCIDENTS** *occurring in the Mines of the Second Bituminous Coal District of Pennsylvania, for the year ended Dec. 31, 1882.*

| Date of accident. | Name of Person Injured. | Age. | Married or single. | Number of orphans. | Name of Colliery. | Location—County. | Date of investigation. | Nature and Cause of Accident. |
|---|---|---|---|---|---|---|---|---|
| Jan. 2 | Henry Rose, | 24 | Single, | | Rostraver, | Westmoreland, | Jan. 2 | Killed by a fall of horse back. |
| 14 | Milton Soles, | 56 | Married, | | McCloskey, | Allegheny, | | Fatally injured by a fall of coal and slate. |
| 16 | John Smith, | 20 | Single, | | Ocean, | Westmoreland, | | Killed by a fall of slate. |
| 18 | Cassius Pierce, | | Single, | | Larimer, | Westmoreland, | | Leg broken by wagons. |
| 23 | Martin Volk, | 35 | Married, | | Waverly, | Westmoreland, | | Back injured by fall of slate. |
| 26 | William Williams, | 16 | Single, | | Southside, | Westmoreland, | | Fatally injured by falling from ears. |
| 28 | Edward Twigger, | 14 | | | Southside, | Westmoreland, | | Fatally injured by being run over by ear on platform near tipple. |
| Feb. 2 | W. Goodbread, | 60 | Married, | | Leechburg, | Westmoreland, | | Fatally injured by premature explosion of blast. |
| 4 | Theodore Stahley, | 29 | Married, | | Enterprise, | Westmoreland, | | Foot crushed by post. |
| 2 | Theodore Fullerton, | 29 | Married, | | Amieville, | Westmoreland, | | Killed at the eoal tipple, his head being eaught between the weight-box and the nut coal chute. |
| 7 | James McNulty, | 68 | Married, | | M. Graver, | Allegheny, | | Leg broken by fall of coal and slate. |
| 17 | Thomas Birch, | | Married, | | Northside, | Westmoreland, | | Leg broken. |
| 27 | Charles Rudolf, | 21 | Single, | | Cornell & Werling's, | Allegheny, | | Bruised by slate. |
| Mar. — | Chauncey Blair, | 24 | Married, | | Cornell & Werling's, | Allegheny, | | Arm broken. |
| 7 | William Garrard, | 45 | Married, | | Waverly, | Westmoreland, | | Leg broken by fall of slate. |
| 11 | James Sterling, | 22 | Single, | | Westmoreland, | Westmoreland, | | Leg broken by fall of eoal and slate. |
| 15 | Aerie Smith, | 53 | Married, | 3 | Rostraver, | Westmoreland, | | Killed on the tipple, by a pit ear running from top of incline plane. |
| 15 | William Housman, | 47 | Married, | 8 | Rostraver, | Westmoreland, | | |
| 15 | Arthur Jones, | 12 | Single, | | Rostraver, | Westmoreland, | | |
| 21 | John Bruck, | | Single, | | Rostraver, | Westmoreland, | | Hips and shoulders injured. |
| 25 | Joseph Roberts, | | Married, | | Rostraver, | Westmoreland, | | Leg broken by a fall of coal after a blast. |
| 27 | Walter Muer, | 40 | Married, | | Isabella, | Westmoreland, | | Hips and side bruised by a fall of slate. |
| 27 | James Lingenbaugh, | 17 | Single, | | | | | Body bruised and two ribs broken. |
| 29 | Bennett Corkus, | 50 | Single, | | Waverly, No. 1, | Westmoreland, | | Foot injured by a fall of slate. |
| 29 | Andrew Allen, | 55 | Married, | | Saltsburg, | Westmoreland, | | Arm broken by a fall of slate. |
| April 1 | Joseph Leidner, | 30 | Married, | | Waverly, No. 1, | Westmoreland, | | Collar bone broken by a fall of slate. |
| 3 | William Cunningham, | 17 | Single, | | Isabella, | Westmoreland, | | Injured by falling under the empty cars. |
| 5 | Hugh McNamee, | 14 | Single, | | Burnett, | Butler, | | Leg broken by a fall of coal. |
| 7 | Charles Radcliffe, | 29 | Single, | | Hampton, | Allegheny, | | Face burned and hand injured with powder by going to a eharge that he thought had missed fire. |
| 17 | Peter Selz, | 22 | Single, | | Waverly, No. 1, | Westmoreland, | | Leg broken by a fall of coal. |
| May 12 | James T. Irving, | 34 | Single, | | Reimerton, | Armstrong, | May 13 | Killed by cars passing over his body while helping to shift car to tipple. |
| 12 | Patrick Hickey, | 58 | Married, | 1 | Penn Gas, No. 1, | Westmoreland, | May 13 | Killed by a fall of slate. |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| May | 13 | Thomas Griffiths, | | Married, | | Barnes, | | | Collar bone broken by a fall of coal. |
| | 16 | James Auld, | 38 | Married, | | Loyalhanna, | Westmoreland, | | Injured by a fall of coal. |
| | 16 | James Goodman, | | | | Northside, | Westmoreland, | | Back injured by a fall of slate. |
| | 17 | William Bond, | 18 | Single, | | Oak Hill, No. 4, | Allegheny, | | Leg cut and bruised by car. |
| | 24 | William Sindof, | 50 | Married, | | Saltsburg, | Westmoreland, | | Bruised by a fall of coal. |
| | 28 | Andrew Reymen, | 28 | Married, | | Standard, | Westmoreland, | May 31 | Killed by a fall of roof in his room. |
| | 28 | Robert McMillin, | 25 | Single, | | | | | Foot injured by pick. |
| | 29 | Joseph Bradigan, | 50 | Married, | | Amieville, | Westmoreland, | | Internally injured by a fall of coal. |
| | 31 | O. C. Brauthover, | 30 | Married, | | Eureka, | Westmoreland, | | Hip bruised by a fall of slate. |
| June | 3 | Henry Zimmerman, | 27 | Married, | 1 | Waverly, No. 2, | Westmoreland, | June 4 | Killed by a fall of slate. |
| | 6 | John Marchbanks, | 50 | Married, | 2 | Youghiogheny, | Allegheny, | June 10 | Fatally injured by a fall of slate and horse back. |
| | 8 | Michael Dorman, | 44 | Married, | 3 | Waverly, No. 1, | Westmoreland, | June 9 | Killed by a fall of coal while loading a car. |
| | 12 | N. F. Johnson, | 38 | Married, | | Barnes, | Westmoreland, | | Back broken by a fall of roof while wedging down loose end of coal in his room. |
| | 19 | William Tall, | 37 | Married, | 4 | Coulter & Huff, | Westmoreland, | | Killed by fall of slate. |
| | 29 | Valentine Durr, | 30 | Married, | | Red Bank, | Armstrong, | | Leg broken by a fall of coal. |
| July | 1 | John Sawer, | | Married, | | Larimer, | Westmoreland, | | Fingers crushed by cars. |
| | 5 | John Koceollok, | 38 | Married, | 3 | Morewood, B, | Westmoreland, | July 5 | Killed by coal car. |
| | 8 | Robert Brown, | 24 | Single, | | Southside, | Westmoreland, | | Leg broken by a fall of coal. |
| | 11 | Robert Coners, | 27 | Married, | 2 | Youghiogheny, | Allegheny, | July 12 | Killed by explosive gas. |
| | 14 | William Valentine, | 55 | Married, | | Southside, | Westmoreland, | | Leg broken by a fall of coal. |
| | 15 | Valentine Hacker, | 18 | Single, | | Loyalhanna, | Westmoreland, | | Foot bruised. |
| | 17 | Henry Argyle, | 24 | Single, | | Sandy Creek, | Allegheny, | July 17 | Killed by a fall of slate. |
| | 18 | Jabez Hartland, | 35 | Married, | | Westmoreland, | Westmoreland, | | Leg broken by a fall of slate. |
| | 20 | Adam Shook, | 35 | Married, | | M. Graver, | Allegheny, | July 20 | Killed by a fall of roof coal. |
| | 21 | Thomas Haley, | 28 | Single, | | Mahoning Furnace, | Armstrong, | July 21 | Killed by a fall of roof. |
| | 25 | Hilarius Zentner, | 44 | Married, | | Northside, | Westmoreland, | July 25 | Killed by a fall of slate. |
| Aug. | 12 | James Crusan, | 40 | Married, | | Millwood, | Westmoreland, | | Foot bruised by a fall of coal. |
| | 25 | William Johnson, | 30 | Married, | | Standard, | Westmoreland, | | Slightly injured by fall of roof. |
| | 25 | Thomas Callahan, | | Married, | 3 | Youghiogheny, | Allegheny, | | Killed by a fall of slate in his room. |
| | 30 | James Hanlon, | 32 | Single, | | Plum Creek, | Allegheny, | Aug. 30 | Killed by a fall of coal and slate. |
| | 31 | Joseph Donehue, | 25 | Single, | | Millwood, | Westmoreland, | | Hand crushed between rib and car in his room. |
| Sept. | 9 | William Lynch, | 11 | | | Horner & Roberts, | Allegheny, | | Leg crushed by attempting to get on cars while in motion at the mouth of pit. He was not employed at the mine. |
| | 14 | James Powell, | | Married, | | Penn Gas, No. 2, | Westmoreland, | | Burnt by explosive gas. |
| | 16 | James Millburn, | | Married, | | Penn Gas, No. 1, | Westmoreland, | Sept. 18 | Killed by descending cage. |
| Oct. | 4 | John Boyd, | 32 | Married, | 2 | Iron City, | Westmoreland, | Oct. 11 | While working at the tipple was killed by a car running from top of the incline plane. |
| | 9 | H. W. Lamp, | 14 | | | Bellview, | Allegheny, | | Killed by being caught by the bull wheel. |
| | 14 | William Jones Davis, | 21 | Single, | | Hecla, | | | Killed by falling into the shaft. |
| | 20 | Timothy Holihan, | 40 | Married, | | | | | Rib injured by a fall of clay and coal. |
| | 27 | Jacob Alberts, | 41 | Married, | | Leechburg, | Westmoreland, | | Leg broken by a fall of coal. |
| | 31 | George Richards, | 40 | Single, | | Barnes, | Butler, | | Injured by a fall of coal. |
| Nov. | 8 | Michael Moolige, | 19 | Single, | | Morewood, A, | Westmoreland, | | Burnt by an explosion by going into a room where the roof had fallen and getting up on the fall. |
| | 8 | Stephen Fabrie, | 30 | Married, | | Morewood, A, | Westmoreland, | | |
| | 8 | Covanch Valyn, | 32 | Married, | | Morewood, A, | Westmoreland, | | |
| | 10 | William Bennett, | 47 | Married, | | Horner & Roberts, | Allegheny, | | Killed by a fall of slate in his room. |
| | 10 | William Walkinson, | | | | Horner & Roberts, | Allegheny, | | Killed by an explosion of gas by going on top of a fall. |
| | 10 | John Urmson, | | | | Horner & Roberts, | Allegheny, | | |
| | 12 | Thomas R. Wilson, | 22 | Single, | | Etna & Vesuvius, | Allegheny, | | Five ribs broken, shoulder dislocated, and otherwise injured, caused by riding on full wagon while returning from his work. |

## LIST OF ACCIDENTS—Continued.

| Date of accident. | Name of Person Injured. | Age. | Married or single. | Number of orphans. | Name of Colliery. | Location—County. | Date of investigation. | Nature and Cause of Accident. |
|---|---|---|---|---|---|---|---|---|
| Nov. 20 | George Needer, | 53 | Married, | 9 | Standard, | Westmoreland, | | Killed by falling into the shaft. |
| 22 | John Clouse, | 21 | Single, | | Reimerton, | Armstrong, | | Fatally injured by fall of coal. |
| Dec. 7 | John Siestek, | 60 | Married, | 8 | Plum Creek, | Allegheny, | Dec. 12 | Killed by a fall of slate. |
| 8 | J. E Smelser, | | Single, | | Saltsburg, | Westmoreland, | | Leg broken and finger cut off by a fall of slate. |
| 13 | Walter Hill, | 34 | Married, | | Bellview, | Allegheny, | | Face and hands burned by an explosion of gas. |
| 14 | John Wilson, | | | | Unity, | Westmoreland, | | Burned by an explosion of gas. |
| 14 | W. H. Irwin, | | | | Unity, | Westmoreland, | | |
| 30 | John Crusan, | 28 | Married, | | Hampton, | Allegheny, | | Leg bruised and small bone broken. |

## THIRD DISTRICT.

To the Honorable A. K. Dunkle, *Secretary of Internal Affairs of the Commonwealth of Pennsylvania:*

Sir: I have the honor herewith to submit my report of the inspection of mines of the Third Bituminous Coal District, for the year ended December 31, 1882.

During the year many of the mines have been operated little more than one-half time. This has been caused largely by the inadequate facilities afforded to shippers by the railroad companies to enable them to ship their coal to market. However, we find an increase of the production of coal of about 10 per cent. over that produced in 1881. The coal territory in the district has been so rapidly developed during the year that the number of mines now opened, if they were operated steady and to their full capacity, are sufficient to increase the production for 1882 fully 40 per cent. It is evident, however, that there are too many mines being opened, and the wants of the coal trade will not insure their steady operation. Thirty-six new mines were opened during the year, while there were but six exhausted, and there are others in progress of being opened.

The condition of the mines in regard to ventilation and drainage, with a few exceptions, is very favorable, and they have undergone a wonderful improvement in these respects during the year.

The number of accidents during the year is sixty-one, an increase over 1881 of fifteen. Number of fatal accidents, seventeen, an increase over 1881 of nine. Number of non-fatal accidents, forty-four, an increase of six. Number of widows, eight, an increase of four over 1881. Orphans, twenty-eight, an increase of ten over 1881.

### CAUSES OF ACCIDENTS.

#### Fatal.

| | |
|---|---|
| By fall of roof, | 5 |
| By fall of coal, | 8 |
| By mine wagons, | 4 |
| Total, | 17 |

#### Non-fatal.

| | |
|---|---|
| By fall of roof, | 13 |
| By fall of coal, | 16 |
| By mine wagons, | 7 |
| By sundry causes, | 8 |
| Total, | 44 |

The following shows the aggregate tonnage, number of employés, &c., taken from the mining companies' returns, in answer to the annual circular for statistics issued by me. I have reports from eighty mines:

| | |
|---|---|
| Amount of coal in tons mined, (of 2000 lbs. per ton,) | 3,679,245 |
| Average number of persons employed inside, | 5,915 |
| Average number of persons employed outside, | 731 |
| Total average number of employés, | 6,646 |
| Average price paid for mining a ton of coal, | 61 cents. |
| Average number of mules and horses employed, | 533 |
| Average number of days worked, | 215 |
| Number of coke ovens, | 247 |

The following is estimated for the whole number of mines in the district:

| | |
|---|---|
| Number of mines that will continue in operation, | 117 |
| Total number of tons of coal mined, | 4,618,245 |
| Total number of persons employed inside, | 7,388 |
| Total number of persons employed outside, | 923 |
| Total number of persons employed in the district, | 8,311 |
| Total number of tons mined per fatal accident, | 271,661+ |
| Total number of tons mined per non-fatal accident, | 104,960+ |

In another part of this report I have given a description of fatal accidents, and of the mines and their improvements, together with other tabulated statistics relating to the mines. I have also written briefly on several topics that I thought would be of sufficient interest to those who are connected with mining operation in the district.

I am yours, very respectfully,

THOMAS K. ADAMS,

*Inspector.*

WHEELER, MERCER CO., *February 3, 1883.*

## NEW VENTILATING POWERS BUILT DURING THE YEAR AT THE FOLLOWING MINES:

### Furnaces.

A furnace at Beaver mine by Lee & Patterson, Lawrence county.

Two furnaces in Victor mine, No. 1, by Victor Coal Company, Clearfield county.

A small furnace at Derby mine, by Thos. Barnes & Bro., Clearfield county.

Two furnaces in Sterling mine, No. 1, by R. H. Powell & Co., Clearfield county.

One furnace in Sterling mine, No. 2, by R. H. Powell & Co., Clearfield county.

One furnace in Harrison mine, by Beadling Bros., Clearfield county.

One furnace in Sprague mine, by Powers, Brown & Co., Jefferson county.

One furnace in Fairmount mine, by Fairmount Iron and Coal Company, Clarion county.

One furnace in Hardscrabble mine, by Brady's Bend Mining Company, Clarion county.

One furnace in Columbia mine, by Mitchell & Keller, Clearfield county.

Two furnaces at Dagus mines, by North-West Mining and Exchange Company, Elk county.

One furnace at Eureka slope, by D. Eldridge, Elk county.

One furnace at Tannerdale, by St. Mary's Coal Company, Elk county.

One furnace at Hazzard mine, by Hazzard, Wood & Co., Mercer county.

One furnace at Instanter, No. 2 mine, by Buffalo Coal Company, McKean county.

One furnace at Cranberry mine, by Oil City and Ridgeway railroad, Venango county.

One furnace at Cameron mine, by Cameron Coal Company, Cameron county.

### Fans.

One Murphy fan six feet in diameter, at Rochester mine, by Bell, Lewis & Yates, Clearfield county.

Two Murphy fans six feet in diameter, at Beechtree mines, No. 1 and 2, by Pittsburgh and Rochester Coal and Iron Company, Jefferson county.

Erecting a ten foot diameter fan, at Stoneboro' mine, No. 3, by the Mercer Iron and Coal Company, Mercer county.

Owing to the number of ventilating powers that have been built during the year the ventilation of the mines in the district has been wonderfully improved. However, I consider that a great lack of judgment or experience has been manifested in too many instances in the building of the furnaces by those in authority at the mines. Many of them are entirely too small for ventilating purposes, and have only been built to meet present emergencies, and not with a view to give sufficient ventilation when the workings of these mines become more extensive. A few more dollars judiciously expended in making the furnaces larger would have given better results. As the greater portion of the mines in the district are shallow, it requires the furnaces to be built larger than were the coal seams found at a greater depth. I also observe that many of the furnace shafts are sunk in the most shallow parts of the workings, no matter whether the location be a favorable one or not. The idea, I suppose, is to save what little extra expense would be required in sinking deeper into the solid strata. Generally such shafts are very damp or wet, thus in a measure destroying the efficiency of the furnaces by reducing the temperature of the upcast column of air, with both fuel and labor wasted as far as increasing the ventilation in mine is concerned. I urge upon mine officials for the future to spare no necessary expense in erecting a substantial ventilating power, in order to maintain a bracing and pure atmosphere sweeping throughout every ramification of the mine. If such be maintained, it is one of the most important factors in mining, to insure the economical operation of the works; but, above all, the greatest consideration in this connection is the increased protection given to the miner's health, who is necessitated to earn a livelihood for his family and himself too often in an impure atmosphere. Give full measure toward insuring health and protection, and profits will surely follow.

### Mine Haulage.

The hauling of the coal from the mines by mule power to the railroad tipples is quite a large item of expense, and if, by the introduction of machinery to supersede the mules, a reduction of the present expense could be made at the rate of two or three cents per ton; this would amount to a large saving upon the aggregate production in a year.

In order that we might better understand the question, I have endeavored to collect data relative to it from many of the mine superintendents in the district, and requested information upon the following points: The number of mules employed in their respective mines; number of tons hauled in ten hours; cost per ton for haulage for the different powers employed; the first cost of the different powers; maintenance of the same; distance the coal has to be hauled and weight of coal in each mine wagon, etc. Only eleven of the superintendents responded, nine of them being from Clearfield and Jefferson counties. One from Elk county, and the other from Clarion county. The data given below on mule haulage is taken for ten mines employing one hundred and fifty-seven mules and having an average production of about seven hundred and nine tons per day. Three tests with locomotives are given, and with an endless and a tail-rope one each. Some of the mine managers reporting employ both mule and machinery for hauling purposes in the same mine, thus enabling them to judge more accurately of the efficiency and economy of the respective powers used.

STATEMENT *Showing Cost of Haulage, Average Tonnage, First Cost of Power, Distance Hauled, etc., by Mule Power.*

| Average number of mules per mine. | Average number of tons per mine daily. | Average number of tons per mule of ten hours daily. | Average distance hauled for round trip per mule, in feet. | Average cost for haulage per ton. | Average first cost of a mule. | Average cost of feed and stable attendance for a mule per year. | Average weight of coal hauled in mine cars each. |
|---|---|---|---|---|---|---|---|
| 15.7 | 709 | 45 | 5,347 | $4\frac{1}{12}$ cts. | $171 50 | $142 50 | 3,649 tbs. |

*By Locomotive, Endless Rope, and Tail Rope.*

| | Average tonnage per day each. | Average distances for round trip, in feet. | Average cost of haulage per ton. | Average cost of repairs for powers used per year. | Average first cost of power used. | Average weight of coal hauled in mine cars each. |
|---|---|---|---|---|---|---|
| Locomotive, . . . . | 807 T. | 5,343 | 1 cent. | $150 | $4,200 | 4,160 tbs. |
| Endless rope, . . . . | 900 T. | 6,500 | $\frac{8}{10}$ cent. | 200 | 4,000 | 3,000 tbs. |
| Tail-rope, . . . . . . | 1,000 T. | 4,400 | $\frac{8}{10}$ cent. | 150 | 7,000 | 4,480 tbs. |

It will be noticed by the above tabulated reports that one mule hauls forty-five tons of coal per day of ten hours, a distance of over one mile at a cost per ton of $4\frac{1}{12}$ cents. This is certainly a very favorable showing for mule haulage, but is a better average than could be accomplished if the whole number of mines in the district was taken into considertion.

Out of the ten reports received on mule power only two are given outside of Clearfield and Jefferson counties, thereby making the tabulated reports more applicable to them than any of the other counties. In these two counties the coal seam is much higher, roads drier, more favorable grades, and mine wagons hold double the quantity of coal than the others. I have made an estimate upon the whole of the mines in the district, and do not think that one mule can haul more than thirty-three tons of coal in ten hours and at an expense of about five and a half cents per ton, and over main and cross entry roads laid with fourteen to sixteen pounds T iron and well kept.

Mr. Robertson, of the Dagus mines, Elk county, in his report states that they have employed twenty eight mules per day for the last six months. Mines running twenty-two days per month, with an average daily (nine hours) production of nine hundred and sixty tons, or thirty-four and two sevenths tons per mule, and hauling the coal a distance of six thousand four hundred feet for round trip. Load of coal in mine cars is about twelve hundred weight. Road laid with fourteen and sixteen pounds T iron, and well kept. Cost for drivers' (twenty-nine) wages alone is five and one quarter cents per ton. One locomotive, it will be seen by the averaged reports, does work nearly equal to eighteen mules. However, at the Sterling mine, No. 1, one locomotive does work equal to thirty-three mules, for nearly equal distances, with locomotive hauling against slight grade with loaded cars, while the mules have a grade in favor of loaded cars. The locomotive hauls from this mine daily eleven hundred tons of coal, a distance of six thousand three hundred and thirty-six feet for round trip. The average first cost of locomotive is $4,200, and average cost for repairs yearly, $150. The average first cost of eighteen mules, $3,247 ; average cost yearly for feed and stable attendance for eighteen mules alone, $2,565. When the mines are not running, no expense is attached to the locomotive, unless interest on investment, while the mules have to be fed whether they work or not ; also, interest on them goes on also. A larger percentage on mules, for depreciation, and being killed, etc., must be allowed than on the locomotives.

Mr. Campbell, of the Sterling mines, Clearfield county, states : " We lose, by accident alone, fifteen per cent. of our mule power, and nearly five per cent. by the increasing of their age, yearly." This is rather above the average, however, as Mr. Campbell's mines have some heavy grades, and, by reason of this, his mules are more liable to be injured. There is some expense with locomotive not connected with mule hauling—such as making hauling-roads larger, laying them with heavier rails, extra expense to keep it in repair, and keeping up separate means of ventilation. However, there is about three cents per ton saved by it, making allowance for these extras. These extras made necessary by the locomotive are avoided by using the endless-rope and tail-rope systems of haulage, and by adopting such means of haulage, greater safety is given to the workingmen.

At the Franklin mine, Mr. Findley, superintendent, used the locomotive in mine for about seven years, but has now withdrawn it, and hauls the coal by means of endless rope, retaining the locomotive outside, and utilizing it as the power to drive the endless rope. It is giving better results than by the employment of locomotive alone. This power shows a production of nine hundred tons daily, hauling a distance of six thousand five hundred feet for round trip, at a cost of eight tenths cent per ton ; while the tail-rope system only shows a production of one thousand tons per day ; distance of round trip, four thousand four hundred feet ; cost per ton, eight tenths cent. But this is not near the efficiency of the tail-rope system. With the same machinery as employed in this test, over two thousand tons could be hauled for such a distance, had they adequate facilities in and about the mine, to put more coal on side-track, and for tipping the coal outside. The endless or tail-rope systems ought at once to supersede locomotives and mules as a means of hauling coal from the mines. The longer the distance that machinery has to haul, in comparison with mules, the greater the economy by its use. The best results obtained from mule-power are at the Rochester mine, Clearfield county, and from locomotive, at the Sterling mines, Clearfield county.

### Hauling Machinery.

The Mashannon Coal Company has introduced the tail-rope system of haulage in their mine near Houtzdale, Clearfield county. A large stationary double engine of eighty horse-power, manufactured by J. & J. B. Milholland, of Pittsburgh, has been erected at mouth of drift, and in connection with the other appliances it hauls the coal from inside station to tipple, a distance of two thousand two hundred feet over nearly a level road. The engine is fitted with a pair of drums, one being used for the tail-rope and the other for the main rope. The latter is equal in length to the hauling road, and the former double that length. The tail rope is conveyed on rollers along the side of hauling road to inside station, and there conducted around a vertical pulley four feet in diameter, and then brought back again to the outside terminus. The drums are fitted with disengaging clutches and brakes, and revolve with the shaft and on it alternately. The main rope is conducted around a grooved pulley at tipple and runs on rollers fixed in middle of road. At the curves a few beveled pulleys are required for the main rope, which may either be fixed between the rails or outside of them. "In working by this method the tail-rope is hooked on to the empty train, and its drum put in gear, and as the train moves off, the brake is used to prevent the main rope running too fast, or if the gradient changes, it prevents the empty train over-running the tail rope. With the full train the tail-rope drum is thrown out and acts as a brake, if necessary, in coming out by." Twenty-five cars (weight of coal in each, two tons of two thousand two hundred and forty pounds per ton) are hauled at each trip, and can make a round trip in about from fifteen to seventeen minutes. Were the other facilities equal to the hauling machinery it could haul about two thousand five hundred tons of coal for its present distance daily. Before the company introduced this machinery they were limited to an output of five hundred tons per day, but now they can produce one thousand tons and employing less mules and drivers. The main rope is three fourths inch steel wire and the tail rope one half inch. Two boilers have been erected, twenty-four feet long and forty inches in diameter. This mode of hauling is a great saving over mule haulage, and all the machinery and connections run smoothly and do the work well.

Other machinery similar to that employed at the Moshannon mine has been erected at Hazzard, Wood & Co.'s new slope in Mercer county, but as this is a new opening, and the slope having a sufficient dip to run the mine cars to the bottom of it, only one rope is required. When the workings become sufficiently advanced, however, the tail rope is going to be employed. This class of machinery, with connections, range in price from $3,500 to $7,000. We consider it one of the best and cheapest means of haulage for roads having grades, less than one in twenty-eight, now in use or that has come under our notice.

C. B. Findley, M. E., and superintendent of the Franklin mine, at Houtzdale, Clearfield county, has introduced the endless-rope system of haulage at each drift in connection with this colliery, which does not require their mine locomotive, which has been employed in mine for years. To now enter it, however, the power of the locomotive has been skillfully utilized by Mr. Findley to drive the endless ropes. At the mouth of each drift an excavation has been made in which two grooved pulleys are placed, one in front of the other, in the middle of the road, and two friction wheels the guage of the locomotive, are put in same excavation, but at the side of track, and these are connected by two cog wheels, so that when the locomotive is driven on to the top of the friction wheels and commences to drive them, at the same time motion is communicated to the grooved pulleys which move the ropes. The rope is twisted round those two grooved pulleys and carried between the rails over two sets of rollers, and is conducted round another pulley at the extreme end of the inside station. This pulley is placed upon a movable carriage and when the rope gets slack the requisite tension is given to it by means of a screw that is attached to the carriage. By this method of hauling coal only two thirds of the quantity of rope is needed that the tail-rope system requires; but owing to the tightness of the rope the work is more severe upon it. The tightness is required to prevent the rope from slipping on the pulleys.

A few links are set into the rope, and by means of a hitching chain the empty trip is attached to the rope. When the locomotive is driven on to the top of the friction wheels and hitched, it is set in motion and off moves the trip, and when it arrives at the inside station the trip is unhitched and then the loaded trip is attached, the locomotive is reversed which brings the trip to mouth of drift. The length of haul in the old drift is 4,000 feet, and in the new drift 2,500 feet. Since this system has been adopted the production of the colliery has been increased from 700 tons to 900 tons daily, for by doing away with the expense of keeping up separate means of ventilation, and the great danger attached to the locomotive when used in the mines. For those who use locomotives Mr. Findley's arrangement is simple and inexpensive, and with a few hundred dollars extra, this system can be put in operation. The weight of locomotive is 8¼ tons, and seven years ago its first cost was $3,500.

A locomotive has been put into the Victor mine, No. 1, by the Victor Coal Company, and can haul 650 tons per day a distance of 4,350 feet. The first cost of locomotive was $4,000. Its size is 4′ 10″×5′.

### Coal Cutting Machinery.

Two classes of coal-cutting machines have been introduced in the mines of the district to supersede the miner in undercutting the coal, and as this is the most laborious part of his work, it would be natural to suppose that he would look upon their introduction with some degree of satisfaction, but quite the reverse of this is true and find him seriously opposing them. He seems to be very jealous of the machines, and, no doubt, reasons thus: every machine can undercut as much coal, equal to so many miners, and by such a result many of them would be thrown out of employment and thereby creating a surplus of laborers. Then a reduction of wages would follow and all the profits derived from the machine would go into the pockets of the operator. We do not wonder at the miners striking, or making strenuous efforts to oppose the introduction; while harboring such gloomy ideas as these, however, the facts bearing upon the introduction of labor-saving machinery in the past does not substantiate such a mode of reasoning. Machinery does not lower wages, nor does it create a surplus of laborers. The miners will not be required to undercut the coal, but all of them will find employment either in operating the machines or loading coal, &c., which will afford them just as remunerative wages as before their introduction. The miners may as well try to stem the tide of the ocean as to try to prevent the introduction of mining machinery. They may strike or refuse to operate the machines, but if they can perform the duty and give the results intended by the inventor, viz: labor-saving and lessening the cost of producing the coal, they will be introduced. If not introduced by the old miners, most certainly other men who would not otherwise have entered the mines will be brought in to run them, and whether the machines are a success or not the new comers generally stay in the mines and become miners; thus by the miners' own action they add largely to their number.

I witnessed both classes of coal cutters in operation. There are five of the Harrison pattern at work in the Dagus mines, Elk county, and four Lechner machines in the New Catfish mine, Clarion county. The Harrison machine requires one skilled man to operate it and one laborer is required to shovel away the cutting. It gives a forward blow in the manner of a piston stroke and gives about two hundred blows per minute. The machine running with such a rapid motion, it is nearly impossible for the man who operates it to guide the blows with that degree of precision necessary to allow it to cut advantageously. It is laborious work to hold and guide one of those machines for one day, as the man is jarred considerably at each blow given by the machine. We believe the average cutting per day to be about twenty-seven square yards of floor. In this mine after taking off the height of cutting it will leave the coal seam about three feet thick. The machines are operated as well as loading the coal by contract at present. The undercutting is paid at the rate of one dollar for every six tons of coal cut. The loaders are paid at the rate of thirty cents per ton.

One favorable test was made with one of those machines, in which it cut and produced, in connection with the labor of eleven and three fourths men, fifty-nine and one half tons of coal, in eight and three fourths hours, at a cost of $26 03, compared with (20) twenty miners producing same tonnage, mining sixty-eight cents per ton, or at a cost of $40 40, thus showing a net profit of $14 37 for one machine. This profit was made after making an allowance for interest on investment and for depreciation of plant. Taking all of the disadvantages of the machine into consideration, we believe that each machine ought to cut at least (30) thirty tons of coal per day of nine hours, in a seam of coal such as that in the Dagus mines. The machine breaks occasionally, causing a serious loss of time. The plant at this colliery will not be less than ($20,000) twenty thousand dollars.

The Lechnor machines are much heavier than those of the Harrison make, and more time is lost with them in changing from room to room. They also have more machinery, causing them to be more liable to breakage; however, after these machines are set up, they do not require to be guided by their attendants while running, and do their cutting with more precision and uniformity, than does the Harrison machines. The cutter or teeth are about one inch wide, and are set into a revolving bar. These bars are three feet wide, and are propelled forward by means of screws, and the accompanying machinery. These cutters are easily broken or blunted, especially if they are run against ribs of sulphur or sulphur balls. When they break, the machine has to be stopped, the bar withdrawn, and the broken or blunted cutters taken out and replaced with sharp ones, before cutting can be commenced again.

An Allison Air Compressor is used for compressing the air to run the four machines, and is placed at foot of the incline planes. The compressed air is conveyed from the compressor into the air receiver in mine, a distance of seventeen hundred feet, by means of two metal pipes, three and one fourth inches in diameter. The air receiver is twenty-six feet long, two feet six inches in diameter. Pipes from the receiver of two inches diameter are led along the cross-headings. Pipes of one and one half inch diameter are attached to those on the cross-heading, and led into the rooms for some distance, then from those room pipes a three fourth inch diameter hose is attached, which make the connection with the machinery. They have also a driller for drilling the holes in the coal operated by compressed air. The cutting machines, each are recommended to make one cut five feet deep, and width of bar three feet, in twelve minutes, or five cuts across wall face five feet deep in one hour. We saw one cut performed nearly in twelve minutes, but no more was done in anything like that time. Where these machines are at work, the coal is three feet high, and very hard to undercut. Each machine is calculated to cut twenty-five tons of this coal per day. The driller can drill a hole three and one half feet deep in two minutes. It was not long after the introduction of the machines that I made my visit to the New Catfish mines, and they certainly were being operated under all the disadvantages attending the introduction of this class of machinery. The men that were running the machine, and also the loaders, were being paid days' wages, but at present, we are informed, the producing of the coal, partly is done by contract. Three machines at time of visit, were only cutting about forty tons per day, but much time was being lost owing to the machines breaking, and the men not having sufficient experience to make a fair test of the power of cutting. The number of men, and expense per day required on inside work, for producing the above forty tons of coal, was as follows:

| | |
|---|---|
| Three men to operate the machine, at $2 25 each, | $6 75 |
| Three helpers to operate the machine, at $1 50 each, | 4 50 |
| Six loaders, at $1 50 each, | 9 00 |
| One man for drilling holes in coal, at $2 25, | 2 25 |
| One man for shooting down mined coal, at $2 00, | 2 00 |
| Total, | $24 50 |

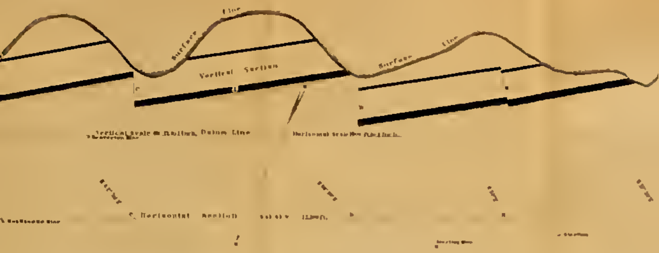
This does not include expense for repairs on the machines, depreciation of plant, nor keeping up and for running the machinery outside. The miners in this mine are paid 80 cents per ton for mining. The plant may cost about ($20,000) twenty thousand dollars. In the absence of more reliable data than we have at present, we are unable to give a correct comparison of the profitableness of this class of machinery over muscular power; however, according to our observation, we would advise all operators to study well every consideration before introducing them. Where the coal is low, hard to mine, and men scarce, and have to pay extra for mining, mining with machines is more profitable than where the coal is high, easy to mine, and men plenty.

### THE COALS OF THE FIRST COAL BASIN, AND DEVELOPMENT OF CLEARFIELD COUNTY.

We know of no other coal field that has been so rapidly developed as that of the steam-coal beds situated in the First Coal Basin of Clearfield county. The coals that are being shipped from this coal field are taken from the D (Lower Freeport) and B (or Clarion) coal beds. The D seam is supposed to lie from fifty to sixty feet higher in the coal measures than that of the B. Both seams, as far as they have been proved by openings, with but few exceptions, are found in such a condition as to afford economical mining. These coals are very tender and do not stand transportation well, but, owing to their excellent quality and purity, they command a ready market for the purposes of generating steam and for steel and iron works. They are truly bituminous coals, as they contain over twenty per cent. of volatile matter, according to the analyses that have been made. The average height of the B seam is about five feet and that of the D about four; however, the B seam in some mines has reached the thickness of seven feet of pure coal.

The geographical position of this coal field has many advantages for affording rapid development not generally existing in the other coal fields of this district. Mostly all the hills which hold these seems are low and do not necessitate the use of incline planes, but are usually high enough above the bed of the streams to allow easy and convenient facilities for tipping the coal into the railroad cars at schutes. The mines are nearly all drift openings, and are above water level, thereby affording natural drainage. Were it not for the building of the railroad sidings, four or five thousand dollars could open and equip a mine. These coals have been pushed into all the eastern markets with great success. In 1874 there were only from twelve to fifteen small mines in operation, and shipping coal over the Pennsylvania Company's Tyrone and Clearfield branch railroad, and now there are forty-three large mines, with many of these having a capacity to produce from eight hundred to one thousand tons daily. Ten additional mines will be ready to start to ship coal soon. The production of coal from these two seams in 1873 was six hundred and twenty thousand three hundred tons, and in 1874 it was six hundred and fifty-eight thousand three hundred and fifteen tons. In 1881 the production was two million two hundred and thirty-one thousand one hundred and sixty-six tons, or an increase over 1874 of nearly 239 per cent. for the seven years, and were the mines, now opened, to be run to their full capacity during 1883, an increased production over 1881 of 30 per cent. could be easily accomplished. Many of the mines in this coal field have run very unsteady during the year owing to the inadequate facilities for transporting this coal to market. The Pennsylvania Company cannot do much better than it is doing at present to accommodate shippers, and before the production can be much increased, other outlets will have to be provided.

This coal field has some peculiar features of a geological character which we desire to notice and thus call the attention of operators, who contemplate opening mines in it. These two seams have been extensively developed from a point one and one half miles south-west of Houtzdale, and extending north-east to Morrisdale, a distance of fourteen miles by two miles wide. The coal measures rise gently from the basin at Osceola south-west, which will appear more clearly from the published sketch furnished me by the able and efficient mine manager, Mr. Campbell, of the Sterling mines. Although the measures rise gently to the south-west, in nearly all of the mines reverse and local dips are encountered, but in most cases they are not of such a serious nature as to cause much extra expense to overcome them. Clay veins and a pinching down of the roof, thereby thinning down the coal often occurs; but the most serious disturbances, and the most difficult to overcome, are the numerous dislocations or displacements of the coal seams. Mr. Campbell's published sketch shows the displacements of the B seam occurring on the south side of the Beaverton run near Houtzdale. It shall be noticed by the sketch in every case we have a "downthrow" going to the south-west, and the line of fracture or slip has a south-east and north-west bearing. On the north of the Beaverton run and extending north-east from Houtzdale to Morrisdale, these dislocations occur nearly in every mine between the two points, and showing displacements of the coal bed from ten to fifty feet. The first we examined


Surface Line
Vertical Section
Surface Line
Vertical Scale Datum Line
Horizontal Scale
C, Horizontal Section

on the north side of the Beaverton was at Sterling mine, No. 2, which shows a "downthrow" to the south-west of twenty-one feet, and having a south-east and north-west course. The next we examined were two faults in the Laurel Run mine, which occur within forty-five yards of each other. One indicates a "downthrow" of twelve feet, and line of slip is ten degrees east, and the other is met in the entry, bearing north forty degrees east, which is a "downthrow" of fifty-three feet; line of slip is north forty degrees west. The next fault was at the Decatur mine, which shows a "downthrow" to the south-west of ten feet. At the Empire mine there is one twenty feet. At the Pardee, one half mile from Decatur mine, there is another, but do not know the number of feet of displacement. The general direction or bearing of the slips are south-east and north-west, and "downthrows" toward the south-west. When those faults are encountered they often destroy the whole plan of the underground workings, and unless the mine manager has the necessary skill and general adaptability, they are very expensive to overcome. We advise mine managers to give some investigation to this feature of the coal field before opening his mine. Although these faults have never been encountered in some mines, yet they are an unknown quantity, and ought to be taken into consideration.

## EXAMINATION OF MINES AND MINE IMPROVEMENTS.

### Mines in Clearfield County.

At the Rochester mine, a new Champion ventilator, or Murphy fan, six feet in diameter, has been erected, and is exhausting from fifty to sixty thousand cubic feet of air per minute. An air-course, or tunnel, has been driven through to the south-east side of coal property, which is connected with the workings, and is used as an inlet, through which the larger portion of the ventilating current is conveyed to the main body of the workings. My visit was made to this mine before the ventilating arrangements were completed, but have been informed since, by the mine officials, that everything in regard to ventilation and drainage is now in good condition. This is one of the largest mines in the district, giving employment to about four hundred hands, and able to produce twelve hundred tons of coal daily.

### Hildrup.

A cutting on main heading, five hundred and sixty-two feet long, eight feet wide, and on an average of four feet deep, has been made, which has improved the road for hauling purposes considerably. The ventilation and drainage are excellent.

### Sterling, Nos. 1 and 2.

Two new ventilating furnaces have been built in No. 1 mine during the year. One is used for ventilating locomotive tunnel, which is placed near the mouth of the tunnel. The other furnace, size six feet by three feet six inches, assists another furnace of the same size to ventilate the workings. The two furnaces, at time of my visit, were circulating, throughout the entire working, about thirty thousand cubic feet of air per minute, which was in excess of the requirements of the mining law. A new Cameron steam pump has been put into the mine to drain the lower portion of the workings. The company has built two hundred railroad cars to transport their coal to tide-water. At No. 2 mine, a new furnace, six feet by three feet six inches, has been built; also, a ventilating shaft has been sunk, which is thirty feet deep, five feet diameter, and stack thirty-two feet. This mine is, also, in splendid condition. These mines are up to the requirements of the law, which speaks well for the present manager, Mr. Campbell. The two mines give employment to over four hundred hands, and produce seventeen hundred tons of coal daily.

### Franklin.

The ventilation has been greatly improved, and the mine otherwise is now in good condition. We find one of the largest ventilating furnaces in this mine in the district, and it produces a large volume of air. Mr. Findley, superintendent, has withdrawn the locomotive from the mine, and has put in an endless rope to haul the coal. The locomotive does the work of a stationary engine, to give motion to the endless rope. The mine is producing about eight hundred tons of coal daily.

### Williamsport.

This mine is located on the Low Grade Division of the A. V. R. R., at Tyler Station, and operated by the Clearfield Coal Company. This mine has not worked very steady for the last two years, but now the company propose doing a good business. They have erected thirty bee-hive coke ovens, and Stutz's coal crushing and washing machinery to prepare and wash the coal. They intend to coke nearly all the coal that is produced at this mine.

### Ocean No. 1

Has added another drift opening to this colliery, which has been opened on a two-hundred-acre tract of coal territory. They have also sunk a new iniet air-shaft in the old drift.

### Victor No. 1

Has put in a mine locomotive for hauling purposes. The length of locomotive tunnel is 1,438 feet; size of locomotive, 5′ wide by 4′ 10″ high; size of tunnel, 9′ wide by 5′ 6″ high. Have built two ventilating furnaces. One for ventilating the locomotive tunnel and the other for the workings. Two ventilating shafts have been sunk and two stacks erected; also a new drift opening has been opened in the same territory but on the opposite side of the hill.

### Harrison.

A small ventilating furnace has been built in this mine which improves the ventilation very much. The mine, otherwise, is in good condition.

feet, and a forty-four feet stack. The other furnace ventilates Nos. 7 and 8 drifts; is also 4′ by 6′ by 10′, shaft forty-four feet deep, and six feet diameter. All of the six drifts are in splendid condition. The company employs over four hundred hands, and produces about one thousand tons daily. The company's mine engineer, Mr. May, of Scranton, has furnished me with a map of Nos. 1 and 2 drifts which I send for publication. I have also been furnished with views of the south plane, which is over nine hundred feet long, and on an angle of about thirty degrees, and outside arrangements generally. The views were taken by David Robertson, Esq., the company's assistant superintendent.

## CLARION COUNTY MINES.

### Fairmount, No. 2.

A new ventilating furnace has been built, size 3′ 6″ by 5′. A furnace shaft sixteen feet deep has been sunk, and a stack thirty-two feet high erected. Ten additional coke ovens have been built at the works, and put in operation during the year. The mine is now in good condition. It has changed ownership during the year, but the company name is the same as when owned by Jones & Brinker.

### Pine Run.

The ventilation of this mine has been improved considerably during the year. The air-courses are kept well up with the main headings, and air-current well distributed to face of workings. Drainage in good condition.

### Hardscrable.

A new ventilating furnace has been built lately, size 3′ 6″ by 4′ by 5′, and air-shaft twelve feet deep, diameter four feet, and stack thirty-two feet high. At time of visit, the air was good, and conveyed well to face of heading and workings. The drainage of mine in fair condition.

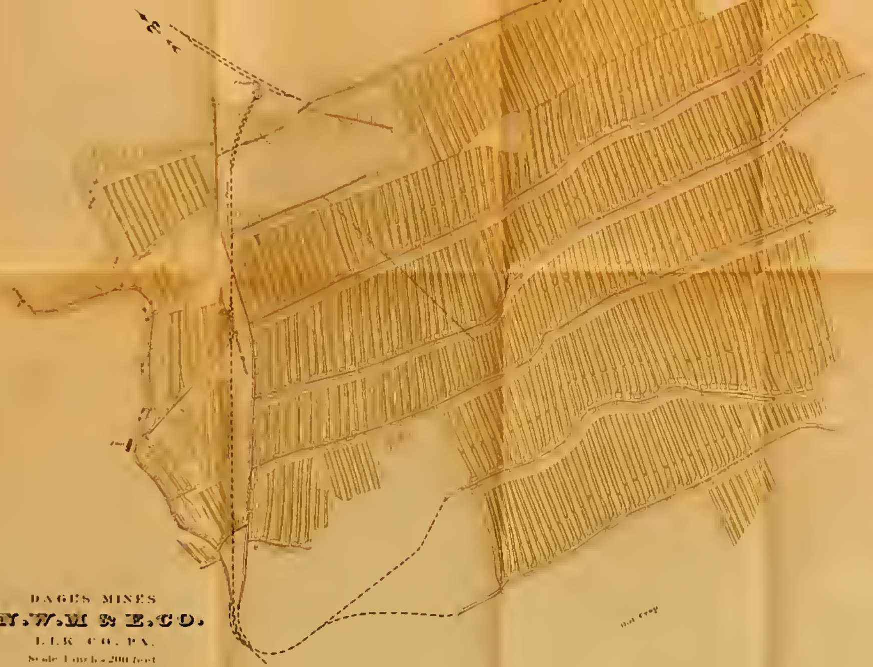
### New Catfish.

At time of visit, the air-current was somewhat weak near the face of workings, but the company is making preparations to put in a furnace to assist the ventilation, and if our suggestions are carried out, there can be no trouble in ventilating the mine properly in the future. The drainage of the mine is in fair condition. The company has put in operation four Lechner coal cutting machines in this mine; also, erected air-compressing machinery, &c., outside.

### Mineral Ridge.

At time of visit, this mine was poorly ventilated, and I notified the company's agent of the fact. Mr. Eicke, superintendent, informs me that the ventilation will be remedied by the building of another furnace without delay. Drainage in fair condition.

[illegible]

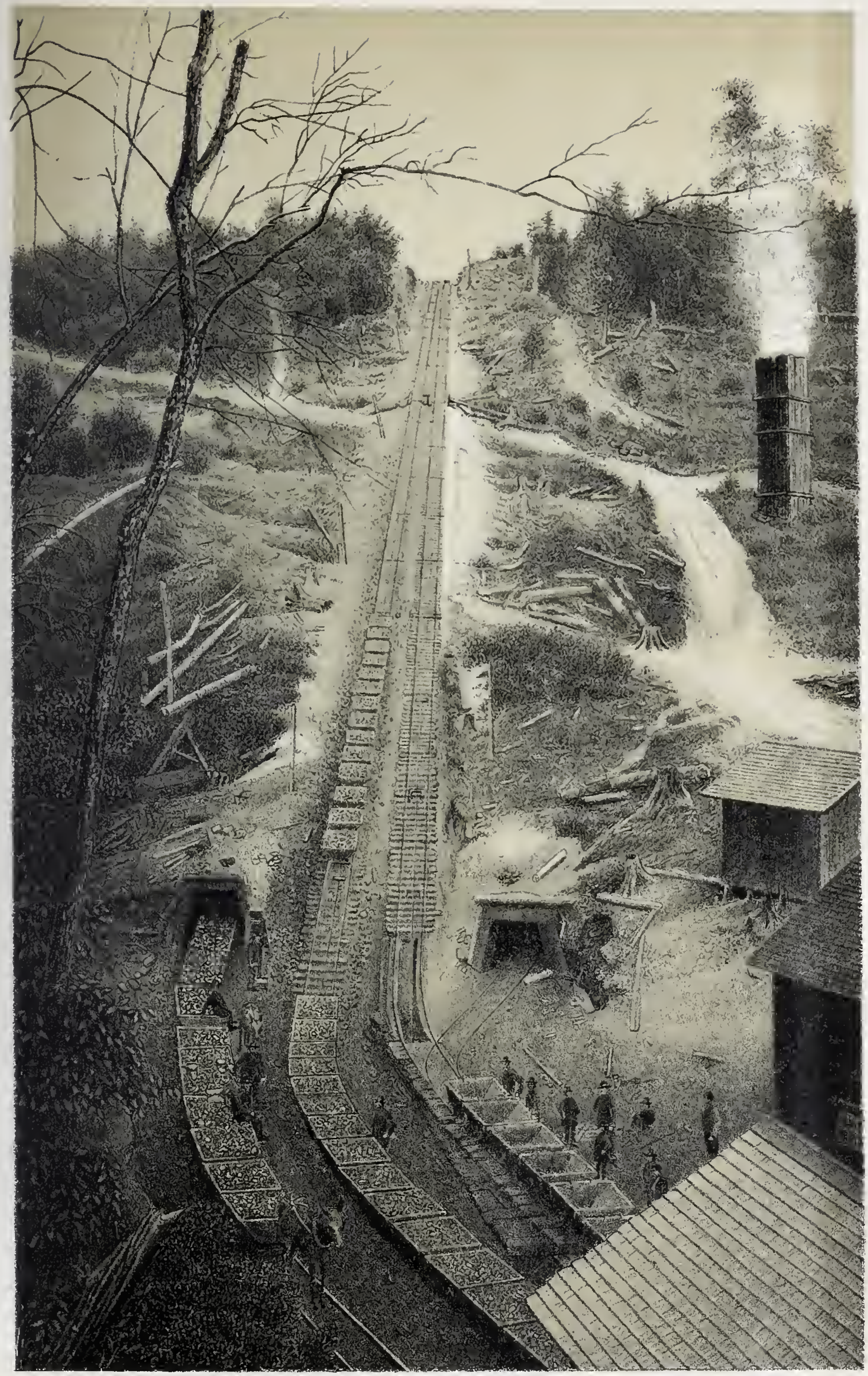


DAGUS MINES

**N. W. M. & E. CO.**

ELK CO. PA.

Scale 1 inch = 2000 feet



Nº 1 PLANE. DAGUS MINES—PA.

## LAWRENCE COUNTY MINES.

### Beaver.

A ventilating furnace has been built this year, size five feet by seven feet by twelve feet; also two shafts have been sunk, an inlet and outlet. Outlet is one hundred and thirty feet deep and six feet by four feet. Inlet is sixty-seven feet deep and six feet by four feet. The hauling roads have all been repaired and made dry. The mine was in excellent condition at time of visit.

### Welsh.

They have constructed an additional incline plane which is two hundred and seventy feet long. This plane takes the place of the graded road over which the mine cars had to be spragged previous to its construction, which was a great source of expense. This plane lets the cars to main incline, and is a decided improvement on the old system. The friction is eight feet in diameter.

## MERCER COUNTY MINES.

### New Virginia.

A shaft one hundred and twenty feet deep and six feet by eight feet, which is fitted up with a very convenient stairway to be used for the purpose of ingress and egress of the working men. A large steam pump has been put in the mine, and a cutting of considerable length and depth for the purpose of drainage. System of working, single entry with air courses. Found volume sufficient for the proper ventilation of the mine at time of visit, and all of the other arrangements of a substantial character and in good order.

### Neshannock.

The second opening (shaft) has been sunk. Depth of shaft, eighty feet, and 6′ by 6′. It had to be timbered for a depth of nearly seventy-five feet. The mine was not in very good condition at time of visit, and notified the mining-boss to make the necessary improvements without delay.

### Bethel.

Second opening has been sunk. The shaft is forty-five feet deep, and 7′ by 5′. A stair has been put in it, and is being used as a traveling way for the ingress and egress to the mine. At time of visit the mine was not sufficiently ventilated, and notified the manager to this effect.

### Chestnut Ridge.

Second opening has been sunk, and fitted up with an easy and convenient stair, which is used as a traveling-way by the miners and workmen. Two new steam pumps, a No. 11 Blake, and a No. 6 Cameron, have been put in mine to produce the drainage. Ventilation produced by exhaust steam. The mine was in fair condition at time of visit.

### Lackawannock.

A drain of considerable length and depth has been cut to drain a portion of the workings. The roads are dry, and in excellent condition. This is the only mine in which fire-damp has been found in the district; however, it is not produced in large quantities. Ventilation fair, and taking the mine as a whole, it is in good condition.

### Cranberry Mine.

This mine is located four miles east of Oil City, in Venango county, and operated by the Oil City and Ridgway Railroad Company. James Kennedy, agent, and John Snedon, mining-boss.

There are two drift openings. and they are driving an entry from each drift to connect their workings. The mining operations are not extensive. At time of visit only twenty-two hands were employed, and producing about twenty-five tons of coal daily. The height of seam about 2′ 6″. System of working, single entry. Drainage by natural means, which was somewhat defective at time of visit. The ventilation was defective, but a new ventilating furnace has been built lately, which will give sufficient ventilation.

### Sligo Branch Mine.

This mine is located near Rimersburg, Clarion county, operated by the Rimersburg Coal Company. S. Coon, agent and mining-boss.

Drift opening, giving employment to twenty men, and producing about forty tons of coal daily. Working by single entry system. Height of coal 3′ 6″. Digging price, eighty cents per ton. Has a good ventilating furnace, which produces a sufficient quantity of air. The ventilation and drainage of mine in good condition.

### Instanter Nos. 1 and 2.

These two mines are operated by the Buffalo Coal Company, at Clermont, McKean county. Mr. J. Tate, agent or superintendent; Robert Dick, mining-boss.

Instanter No. 1 is in splendid condition. A strong current of air is circulating throughout the entire workings, and the drainage of the mine is also in good condition. A new ventilating furnace has been built, size seven feet wide, five feet high, bars six feet long, and arch fifteen feet long. Furnace shaft is twenty-six feet deep, stack forty-two feet, diameter of shaft, five feet. Measured nine thousand seven hundred and sixty cubic feet of air passing near the furnace, and over five thousand cubic feet of fresh air was circulating near the face of workings. Number of hands employed inside, forty-five. System of working, double-heading.

Instanter No. 1 is on the return. The only work being done is the drawing of the pillars. The company has opened a new drift to be known as Instanter No. 1, which started to ship coal about the 1st of November, size of drift inside of timbers in 7′ 6″, spread 5′ 6″, and collar 6′ 6″ high. This mine will be worked upon the double-heading plan.

### Cameron Mine.

This is a drift-opening and located about three miles from Cameron, Cameron county, on the P. & E. railroad, operated by the Cameron Coal Company. John Little, superintendent; Elijah Goodyear, mining-boss The coal is brought forward from mine to the top of incline plane by a small locomotive, a distance of nearly two miles. The incline plane is double track on an angle of about thirty-five degrees and twelve hundred feet long. The workings are laid out on single-entry system with air-courses being driven parallel with entries. The mining-boss built a small ventilating furnace, and I would advise him to apply for a patent; however, if a fire is kept in it we have no doubt but what it will help the ventilation. The mine is well laid out and there ought to be no trouble to ventilate it properly. There are eight coke ovens in operation at the mine. The company has made another opening into a lower seam than the one being now operated. Forty-six men and boys are employed in and about the mine.

## NEW MINES PUT IN OPERATION DURING THE YEAR.

Home Bank, No. 3, a shaft-opening, one hundred and thirty-seven feet deep, and size 8′ by 17′, including air-chamber 3′ 10″ by 8′, sunk to Sharon block coal on the 7th of January. Coal is 2′ 6″ thick. System of working, single entry with air-course. Ventilated by exhaust steam and drainage effected by steam pumps. Mine operated by Buhl, Westerman & Co., and located in Hickory township, Mercer county.

### Pardee.

This is a drift-opening located on the Morrisdale branch railroad, Clearfield county, and operated by Duncan, Lingley & Co. Mine-manager and mine-boss, W. C. Lingley.

Size of opening (timbers) eight feet spread, six feet collar, and six feet high. Height of seam, four feet, with a good slate roof. System of working, single entry. The outside arrangements are substantial with a view of making large shipments of coal.

### Hudson.

A new drift-opening, located near Steiner's, on the Tyrone and Clearfield railroad, Clearfield county, and operated by D. D. Dodge & Co. Robert C. Fishburn, manager and mining-boss.

Mine commenced to ship coal March 15. The coal is hauled by mules over a tram road from mouth of drift to tipple, a distance of three fourths of a mile. System of working, single entry. Working the D coal bed about three feet thick. The roof is very tender, which gives trouble to keep it up. Working about twenty miners and shipping about eighty-five tons daily at time of my visit, April 15.

### Sharon.

A shaft-opening located in Pine township, on the Allegheny and Shenango railroad, Mercer county, and operated by the Sharon Coal Company. Morgan B. Hofius, superintendent; Adam Saylor, mining-boss.

Depth of shaft, fifty feet; size, 16′ by 8′, inclusive of air-chamber which is 3′ 6″ by 8′. Commenced to ship coal on the 1st of May. Height of coal seam about four feet and very soft, with a roof of soapstone and very tender. Hoisting engine is small with a drum of about three feet in diameter. Have erected two boilers. System of working, single entry with air-courses. Roads laid with sixteen pounds T iron. Ventilated by exhaust steam and drained by two Cameron steam pumps, Nos. 5 and 12. A new air-shaft and traveling-way have been sunk, and an easy and convenient stairway has been put in it for the ingress and egress of the workmen.

### Wise, No. 2.

This shaft is operated by the Snyder Coal Company, and located near Neshannock, Mercer county. Enoch Filer, superintendent; Henry Filer, mining-boss.

Depth of shaft, ninety-seven feet; size, 14′ by 8′. Shaft had to be timbered seventy-five feet. Working the Sharon block coal, three feet four inches thick. Coal territory not extensive. System of working, single entry. Drainage effected by steam pumps. Have been shipping coal since August.

### Ocean, No. 2.

Shaft, operated by John Whitehead & Co., located on the Houtzdale Branch railroad, one and one half miles south-west of Houtzdale, Clearfield county. John Whitehead, general manager, A. G. Spears, superintendent, and Robert Whitehead, mining-boss.

This shaft is sunk on the dip of the company's nine-hundred-acre lease, and will, in all probability, drain the whole territory. It is seventy-eight feet deep; size, 11′ by 18′. A hoisting engine and four boilers, thirty-two feet long and three feet in diameter, have been erected. The engine is sixty horse-power. A large Cornish steam pump, with steam cylinders, thirty-six inches in diameter, and two suction cylinders, sixteen inches in diameter each. Column pipes sixteen inches in diameter.

The mine makes a large quantity of water, but this pump is equal to the task, and can keep the mine perfectly drained.

### Eureka, No. 3.

A drift opening, located on the Houtzdale Branch railroad, Clearfield county, and operated by Berwind, White & Co. A. Crist, superintendent; James B. Young, mining-boss.

Coal let down from mouth of drift by means of drum and brake. The plane is four hundred and thirty feet long. Commenced shipping coal last March. Struck a fault in main heading, indicating a down-throw of several feet.

### Stoneboro', No. 3.

A slope opening, located at Stoneboro', Mercer county, and operated by

Mercer Iron and Coal Company. Herbert Edwards, mine-manager and mining-boss.

Length of slope, one hundred and ninety-five feet; dip, one foot in four, with single track. Hoisting engine, fifty horse-power, and two boilers. Hauling-rope, one inch diameter steel wire. System of working, single entry, with air-courses. Width of rooms, seven yards; room ribs, nine feet; pillars on entries, six yards; height of entry, five feet, and seven feet wide. Roads laid with sixteen pounds T iron. An air-shaft has been sunk; size, 8′ by 8′, inclusive of traveling-way, size of which is 8′ by 2½′. They are erecting a ten feet diameter fan for ventilation. Drainage produced by steam-pump.

At time of visit the main water-course of No. 2 mine had fallen shut, and the workings were flooded. Mine manager had three shifts at work, with ten or twelve men at work on each shift, clearing the falls and repairing the water-level, and before the month (July) was out, everything was repaired and mine put in running order again.

### Sprague.

Drift opening, located near Reynoldsville, Jefferson county, and operated by Powers, Brown & Co. James Powers, superintendent; Benjamin J. Morris, mining-boss.

Size of drift, eight feet spread, five feet six inches collar, and six feet eight inches high. Working the Reynoldsville Gas Coal seam, six feet six inches pure coal, and two and one half feet top coal, impure. System of working, double heading. Size of entries, 6′ by 8′. Pillars between parallel headings, twenty-one feet. Rooms, twenty-two feet wide. Ribs, twelve feet. Roads laid with sixteen pounds T iron rails. Gauge of road, three feet two inches. Have erected a patent tipple, or "Billy Fairplay." Have sunk a ventilating shaft—depth, sixty-seven feet; stack, twenty feet; size 6′ by 8′. Built a new furnace six feet wide, five and one half feet high, and fifteen feet long. Mine above water-level, and in good condition.

### Beechtree, Nos. 1 and 2.

Both drifts are located at Beechtree, on a branch railroad of the Rochester and Pittsburgh, in Jefferson county, and operated by the Rochester-Pittsburgh Iron and Coal Company. General manager, W. G. Platt. Mine-manager and mining-boss, Richard Woodward. Both openings are driven double from mouth of drifts. Size of drifts, twelve feet spread, nine feet collar, and seven feet high, timbers twelve inches square. Going to work the Lower Freeport seam three feet six inches high. The company has a coal territory of about one thousand acres. They intend making large shipments of coal. System of working, double-heading. Have erected two Murphy fans for ventilating purposes.

### Falls Creek.

Located at Fal's Creek, Jefferson county, and operated by the McConnell Brothers. Edward Bell, mining-boss.

Commenced shipping coal in August. The drift-opening has a seven and a half feet spread, 6′ 6″ collar, and 6′ 6″ high, timbers 10″ square. System of working, double-heading. Size of headings, 8′ by 6′. Working the Lower Freeport seam from four to five feet thick. Have sunk a ventilating shaft seven feet diameter and forty-two feet deep. Have erected a patent tipple or a "Billy Fairplay." Have built three fourths of a mile of railroad to connect with low grade on the A. and V. railroad.

### Tannerdale.

Located two miles east of St. Mary's, Elk county, on the P. and E. railroad, and operated by St. Mary's Coal Company. Jacob Anderson, mining-boss.

Drift-opening, size 6′ by 8′. System of working, double-heading. The company has only thirty-five acres of coal territory at this mine. Have built a new furnace, 4′ by 4′, and sunk a ventilating shaft. Mine in good condition.

### Dagus, No. 11.

Drift-opening, located at Dagus mines, Elk county, and operated by the North-Western and Exchange Company.

### Eureka.

Located near Dagus mines, Elk county, and operated by D. Eldridge. D. Eldridge, superintendent; Patrick Fleming, mining-boss.

This new opening is a slope on an angle of twenty-five degrees and two hundred and forty feet long, size 9′ by 6′. Hauling engine is forty horse power. Slope is laid with single track. Commenced shipping coal in June, and are now shipping about one hundred and fifty tons daily. Employing about fifty miners. System of working, double-heading. The workings are well laid out. A new furnace, 6′ by 3½′, has been built, and a seven feet square ventilating shaft has been sunk. The mine is in good condition, and the mining-boss proposes keeping it so in the future.

### Long Run.

Located about two miles west of New Bethlehem, Clarion county, and operated by the Long Run Coal Company, J. M. Brinker, superintendent; John Friel, mining-boss.

An eleven-ton locomotive is going to be used to haul the coal from the foot of incline plane to chutes on the L. G. D. of the A. V. R. R., a distance of six thousand two hundred feet. Gauge of road, three feet. Incline plane is two thousand one hundred feet long. Mine wagons to be let down it by means of brake and drum. Diameter of drum, ten feet. The plane is laid double track. Going to work the Lower Freeport seam seven and one half feet thick. System of working, double heading. Size of drift is seven feet spread, five feet ten inches collar, and six feet high. Timbers ten inches square. In driving the two main headings they encountered a fault three hundred and twenty-five feet from mouth of drift, which threw the seam up about seven feet, but soon dipped down again, and will be easily overcome. They are building thirty coke ovens, (bee-hive,) and also erecting coal-washing machinery to wash the slack of mine. The company has about eight hundred acres of coal territory.

### Mineral Ridge, No. 2.

Drift opening, located at Monterey, Clarion county, and operated by the Mineral Ridge Coal Company. Superintendent, C. W. H. Eicke. Thomas Major, mining boss.

This drift is opened on the lower vein, known as Limestone Bed, fifty feet lower in the measures than No. 1 drift. The coal is conveyed down the same plane as No. 1 drift. Size of drift, nine feet spread, seven feet collar, and seven feet high. Working only twenty-four miners. Height of coal seam, three feet.

### Red Bank, No. 2.

Located at Red Bank, Clarion county, and operated by Alexander Reynolds' Sons. David Reynolds, superintendent. Drift opening.

### Allport.

Drift opening, located on the Morrisdale Branch railroad, near Morrisdale, Clearfield county, and operated by D. Holt, Schoonover, & Co. Commenced shipping coal in December.

### Hazzard Slope.

Located near Jackson Center, Mercer county, and operated by Hazzard, Wood, & Co. Frank Hazzard, general manager; Edward Hughs, mining boss.

Commenced shipping coal in October. Length of slope from bottom to weigh-house, nine hundred feet. Size, eight feet spread, six feet collar, and six feet high. Dip of slope, three inches to the yard. The machinery is fitted up to work upon the tail-rope syetem, but only using the hauling rope at present. Have erected double engine, sixty horse power, also two boilers. The distance between the weigh-house and stationary engine for hauling the trip of loaded cars is two hundred feet. An average of twelve cars is brought up the slope at each trip, but have brought up as many as twenty on a trip. System of working is single entry, with air courses. Coal about four and one half feet high. Have built a small furnace 3 by 4 feet, and also a ventilating shaft has been sunk, depth twenty-two feet, with a stack thirty-two feet high. Producing one hundred tons daily. Employ thirty-four miners; four boys, and eleven other employés.

### Morrisdale, Nos. 12 and 13.

Drift openings, located near Morrisdale, Clearfield county, and operated by R. B. Wigton & Son. William Wigton, superintendent.

## NEW MINES OPENED DURING THE YEAR, BUT HAVE NOT YET COMMENCED TO SHIP COAL.

### Pacific, No. 2.

Drift opening, located near Houtzdale, Clearfield county, and to be operated by John Whitehead & Co. A. G. Spears, mine superintendent.

### Eureka, No. 4.

Drift opening, located near Houtzdale. Clearfield county, and to be operated by Berwind White & Co. Peter Cameron, senior, superintendent.

### Webster, No. 2, (or Houtzdale.)

Slope, located at Houtzdale, Clearfield county, to be operated by the Houtzdale Coal Company. Superintendent, C. W. Van Dusen ; James H. Minds, mining boss.

### Coal Run (N.)

Drift, located on the Houtzdale Branch railroad, two miles west of Osceola mills, Clearfield county, to be operated by the Ashland Coal Company. J. P. Colihan, superintendent.

### Lancashire, No. 2.

Drift, located on Crowel Run Branch railroad, two miles north of Osceola mills, Clearfield county, to be operated by Thomas Barnes & Brother. Thomas Barnes, superintendent.

### Victor, Nos. 2 and 3.

Drifts, located on Crowel Run Branch railroad, two miles north of Osceola mills, Clearfield county, and to be operated by the Victor Coal Company. John Walton, mine manager.

### Keystone.

Drift, located on Crowel Run Branch railroad, two miles north of Osceola mills, Clearfield county, to be operated by D. W. Holt & Co. D. W. Holt, superintendent.

### Laurel Run, No. 2.

Drift, located on Crowel Run Branch railroad, near Osceola mills, Clearfield county, to be operated by John Nuttall & Co. John Nuttall, superintendent.

### Bucktail, Nos. 1 and 2.

Drifts, located near Williamsville, Elk county, to be operated by the North-western and Exchange Company. David Robertson, assistant superintendent.

### Spears.

Shaft, located near Grove City, Mercer county. Operated by the Pine Grove Coal Company. James Spears, mine manager.

Depth of shaft, seventy-six feet, size, 16′×8′, inclusive of air-chamber. Hoisting engine, thirty-five horse-power, two flue-boilers, twenty-eight feet long, 40″ diameter. Shaft timbered, thirty-five feet ; size of timber, 10″×8″. Shaft sunk in thirty days. Two Cameron steam pumps, No. 10 each. Height of coal seam, five feet.

### Griffith.

Slope, located near Jackson Center, Mercer county, and operated by the Egbert Coal Company. S. B. Griffith, superintendent.

Length of slope, one hundred and seventy-six feet ; size, 8′ spread, 6′

collar, 6′ high. Dip of slope, one foot in four. Length of platform, from knuckle to tipple, one hundred and eight feet; tipple, thirty feet high. Going to erect a stationary engine, fifty horse-power; also, a large flue-boiler. Height of coal seam, four feet.

### Artic.

Operated by Holt, Passmore & Co. Located near Osceola, Clearfield county. Drift opening. James Passmore, superintendent.

## MINES EXHAUSTED THIS YEAR.

Oakland shaft No. 3. operated by Pierce & Scott, Mercer county.
Koonce shaft, operated by Morris Coal Company, Mercer county.
Wise shaft No. 1, operated by Snyder Coal Company, Mercer county.
Eureka drift, operated by D. Eldridge, Elk county.
Buttsville slope, operated by James E. Butts. McKean county.
Diamond drift, operated by Elias Rogers, Jefferson county.

## DESCRIPTIVE RECORD OF FATAL ACCIDENTS.

### Fatal Accidents by Falls of Coal.

ACCIDENT No. 4.—Thomas Jack, Hungarian, miner, aged thirty years. was killed by fall of coal in the Mapleton mine, Osceola, Clearfield county. January 10. He and his fellow-workmen were driving the No. 7 cross-heading, which was being driven twenty-one feet wide. On the day previous to the accident they had the coal undermined about five feet deep, for eighteen feet across their place, and at night before going home they fired two shots in the mined coal, but did not fall it. The next morning the two men returned to work, and Mr. Jack, without securing or attempting to take down the shot coal, carelessly sat down in front of it, to bear-in the remaining three feet that were left unmined the night before, and while lying on the floor mining, the whole mass of undercut coal, weighing about ten tons, fell, completely burying him. His partner, also a Hungarian, had requested Jack to quit mining in front of the loose coal, until they had either secured or taken it down, but it seems that he had given little attention to the friendly advice, as Jack stated several times that there was no danger. The deceased leaves a wife and two children. Neither Jack nor his partner could speak the English language so as to be understood plainly and we had to depend mostly upon an interperter for our information This accident took place through gross carelessness.

ACCIDENT No. 12.—John Bishop, Welshman, a miner, aged seventy-two years, was fatally injured by fall of coal in Pancoast mine, at Pancoast, Jefferson county, on the 30th of March. He was working at a pillar or room-rib about seven feet wide. The day preceding the accident he had under-cut the pillar about six feet along the face, and about four feet deep. On returning to his work next morning to make ready coal, the mine being idle that day, he unfortunately sat down in front of the mined coal and put his legs under it, and was sitting in this manner when about seven hundred pounds of the coal fell down upon his legs, breaking one and crushing the other. He was held fast by the coal for over two hours, until released by Mr. Williams, the mining boss, and the repairsman. They took him home with all possible haste, but being old and physically weak, he died four hours after being taken home. He leaves a widow, but no children.

ACCIDENT No. 36.—Joseph Hoover, German, a miner, fifty-six years of age, was fatally injured by fall of coal in Sterling mine, No. 1, Clearfield county, on July 28, and died on the 31st of same month. When injured, he was cutting top coal to make small, with which to bed his car, that his son was loading at that time, and while in the act of doing so, a piece of coal, weighing about five hundred pounds, fell, breaking his leg, and to all appearance receiving other slight bruises about the head and body. He was almost deaf, and I believe, had he had his hearing, he would have heard the coal giving way, and would not have been injured. He was also physically weak, and not able to endure much injury. He leaves a widow and four children.

ACCIDENT No. 39.—Joseph Petuch, Hungarian, a miner, aged thirty-five years, was killed instantly in the Webster mine, at Houtzdale, Clearfield county, by fall of coal, on July 27. He and his partner, John Gamotto, had fourteen feet of the coal across the wall face undermined nearly five and one half feet deep, and had fired two shots in it, but had not enough powder in the charges to fall the coal. However, it was much shattered and broken, so much so, that the shot next to the room-rib had made a cutting in the coal on the rib side of about seven or eight inches wide, and for the length of the under-cut coal. After the shots were fired, Gamotto commenced to dress up the rib side, thus releasing the shot coal, while Mr. Petuch sat down in front of loose coal to bear-in, and had just began to mine, when the coal fell, about nine tons of it. The coal had to be broken off Petuch's head and body with picks by his partner and the other miners that came to the rescue. They certainly did not use any precaution to prevent the accident. The idea of a miner sitting down in front of shot coal, nearly at the drop, without setting spraggs to support it, is too ridiculous. Neither Petuch nor Gamotto could speak the English language, but had been mining coal in this country for about two and one half years. He is married, and leaves a widow and four orphans.

ACCIDENT No. 40.—Adam Cowan, Englishman, a miner, aged twenty-one years, was killed by fall of coal in No. 2 drift of the Franklin colliery, Houtzdale, Clearfield county, on August 17. He was lying on his side, bearing-in, squaring up the mining to the right rib, while his partner, William Turnbull, was mining close by him. However, Turnbull left Cowan mining, while he went out the road to take part of his dinner. Cowan had finished his mining, and was about to retire to where his partner was sitting, when the coal fell upon him. The mass would weigh about twenty-two hundred weight. A false slip was running along the right rib where Cowan was mining, and another at right angles to it on the face of the coal. As the coal was much shattered by previous blasts, it should have been taken down with the picks as it was mined. This precaution and that of sounding the coal were neglected, it seems. He was a single man, and only eleven months in this country.

ACCIDENT No. 43.—On August. 8, Mike Peryel, Hungarian, miner, aged twenty-seven years, was killed by a fall of coal, in Lancashire mine, Clearfield county. He had his place mined twelve feet across the wall face, and about four feet deep, and was lying under the mined coal, bearing-in, extending his mining deeper, when a triangular piece of coal, weighing several hundred weight, dropped down upon his head and shoulders. He was found dead under the coal, by the two Hungarians who were in the room next to him. He was working by himself the day he was killed, as his partner was sick and not in the mine. He was a single man.

ACCIDENT No. 44.—James McAteere, miner, aged sixty years, was fatally injured by fall of coal in Ocean mine, No. 1, at Houtzdale, Clearfield county, on the 28th of August, and died on the 31st of same month. Mr. McAteere and his partner, James Gilland, were working in a breast together, and had put in a deep mining. James Gilland requested McAteere to prepare a shot of powder for the purpose of blasting down the mined coal, but before doing so he returned to see if the coal was sufficiently mined, and on examining it he proceeded to knock out the sprags that were set as supports, and while in the act of removing them at the center of the room, a piece of coal of several hundred weight fell, striking him upon the back. At first his injuries were not regarded as serious, as he was able to walk from the mouth of drift to his boarding-house without assistance, but he died the third day after receiving them. He was single and a native of Ireland.

ACCIDENT No. 55.—On the 30th October, William Hutchinson, miner, aged twenty-two years, was instantly killed by fall of coal in Moshannon mine, Clearfield county, while drawing a room rib or pillar in one of cross-headings. The roof of the room had fallen close to the end of the pillar, and while cutting across the rib to open out a new face, they took it in a breast of about seventeen or eighteen feet wide, and mined this stretch of coal through into the next room, first on the end next to the cross-heading, thereby leaving a stump of coal next to the gob-waste of about fourteen feet long and from two to three feet wide. In working back this coal the greatest care ought to have been exercised, as the roof was fallen down on the end and on one side of the pillar. Both this young man and his older brother were mining at this stump of coal, and had it mined for ten feet along the side and through into the adjoining room, when the coal, weighing about one thousand seven hundred pounds, fell upon the younger brother. The coal was cut loose on two sides and on end next to the heading and hanging without support of any kind, although they had both sprags and other timbers beside them. In cutting out the new face for their pillar they cut it through on the wrong end and made their cross-cut too wide, especially when the roof was so dangerous, but suppose rather than they would be at any inconvenience in driving a little narrow work they would rather run the risk of losing their lives. He was unmarried and a native of England, and but a short time in this country.

### Accidents by Falls of Rock or Roof.

ACCIDENT No. 24.—John Hutchinson, a miner, aged forty-two years, was fatally injured by fall of rock while working in his room in New Catfish mine, Clarion county, on the 26th of April. The weight of the stone that fell upon him would be about ten hundred pounds. It had two parallel fractures about three or four feet apart, and running over on to top of the coal. There was also one crack in roof at right angles to them about ten feet from face of coal, and Mr. Hutchinson had one prop set to this stone to secure it from falling, but when the next fall of coal took place he encountered another crack at right angles to the two fractures, thus leaving the whole weight of the stone upon a single prop. He had a lump of coal placed on its edge splitting off some impure coal when the lump of coal fell over on the prop that was supporting the stone, knocking it out, thereby showing conclusively that the prop was carelessly set, then down came the stone upon him, which would have killed him instantly had it not been that some loose lumps were laying upon the floor directly under the stone, which had a tendency to save him from the whole weight of it. At it was, he lived two hours. I was in Mr. Hutchinson's room two days previous to the accident, and then requested him to set another two props to this stone that fell upon him. While in his room he sent his two boys for two props to set up, and they brought them; so I left the place, thinking that he would carry out my instructions, but when called back two days later the props were still laying, and had never been set. He is a native Amerieau, married, and leaves a widow and two orphans.

ACCIDENT No. 34.—On April 7, John Evarts, a miner, aged thirty-five years, was fatally injured in the Empire mine, Clearfield county. Mr. Evarts was making preparations to fire a blast in the coal in his room when a piece of stone, weighing about three hundred pounds, fell from the roof, crushing his head against the bottom bench of the coal. He had a prop set to this stone, but had it set on the thin edge, and, as the prop had been set without a cap, and the roof being tender, it broke over the prop. He lived about three hours. He is an American, and leaves a widow, but no children.

ACCIDENT No. 50.—John C. Steel, a miner, aged sixty years, was fatally injured by a fall of rock from roof in New Catfish mine, Clarion county, on the 27th of October. Mr. Steel was working in his room when a stone fell from the roof, weighing about fifteen cwt., upon him. He was caught by the arm and shoulders by this stone and held fast. While partly under this stone other parts of the roof fell, showing that it had been in a very dangerous condition. The men who came into his room to release him had to set timber to the roof, as they were afraid of it falling on them while they were trying to take Mr. Steel from under the stone. Mr. Steel had no timbers in his working place at time of accident, and the timbers that were set were brought from other rooms. The roof was much fractured in his room, which needed extra care, and ought to have had about eight more props set to it. The props were back about twelve feet, and room was twenty-one feet wide. Mr. Steel lived long enough to be taken home. Mr. Steel and son requested that timber be sent into their place, so that they could secure their roof, but were neglected to be taken into them, and as this was a direct violation of the fifth section of the mining law, I was duty bound to enter suit against the mining boss. He was married, and leaves a widow and eight children.

Accident No. 54.—Robert Marsden, a driver, aged twenty-five years, was instantly killed by a fall of roof in Webster mine, Clearfield county, on October 23d. He was driving, and was coming out of the drift with a trip of cars, ten in number, when one car, the fifth on the trip, jumped off the track, thereby knocking out a set of timbers, and allowing the surface or roof to fall upon him. From the mouth of the drift the main hauling road had a gentle grade for several hundred feet, or to first turn-out; the rise was in favor of the loaded wagons. Between the mouth of the drift and turn-out there is the first cross-heading, with quite a number of miners working in it, who have a separate set of drivers for hauling their coal. Mr. Marsden was station driver, and hauling from the first turn-out to the tipple, in connection with the drivers hauling from the main body of the workings. Marsden was notified by mining boss to always wait at the top of grade until the drivers that were hauling from this cross-heading went in with their empty trip, so that he would not need to brake his cars very tight in coming down the grade; but it seems that he disregarded the instructions of the mining boss, and came down the grade before the other drivers had gone into the cross-heading. Before he came to the heading with his trip he stopped it; thinking then, no doubt, that he could make a few yards nearer to heading before the drivers would come, he started up his mules again, and got between the fifth and sixth cars, and put down the brake very tight upon the wheels on the right side of the car, and as the trip was going around a left curve it drew the car off the track, knocking out the timbers. The timbers in the drift at the point where the accident took place had (inside of timbers) a nine feet spread, with a collar five feet two inches and six feet high. He was married, and leaves a young widow, but no children. He is an American.

Accident No. 58.—William Fleming, miner boy, aged fifteen years, was fatally injured on December 28th by fall of rock from roof while being engaged in setting a prop to the roof in a room in the Cascade mine, Elk county, operated by Kaul & Hall. The boy was working with his older brother, and was about to leave for home when the roof fell. He lived an hour after being taken out of the mine.

### Fatal Accidents by Mine Wagons.

ACCIDENT No. 7.—George Killer, trapper boy, aged twelve years, was fatally injured in West Moshannon mine, Clearfield county, on the 14th of January. The door which the boy attended was located near the turnout or siding, and after the driver had passed through his door with his trip he followed him out to the station. At the turnout the track for the empty wagons is elevated at its center, giving it a gentle grade in both directions. At the summit there was an empty wagon standing, which the driver pushed away in the directions of the workings. Another wagon was standing at the points of the turnout, and just as the boy had passed the wagon he stumbled and fell across the empty track between the standing and moving cars. His head was caught between the hitching plates of the cars when they came together fracturing his skull. He died in a few hours.

ACCIDENT No. 19.—Edward Kirtley, trapper boy, aged twelve years, was killed instantly by mine wagons in Dagus mine, Elk county, on the 11th of April. After the driver got through his door he got on the cars of the loaded trip, and had fallen down between them, some of which passed over his body. The driver not knowing that he was upon the loaded trip going out, he found the boy lying dead upon his return trip.

ACCIDENT No. 27.—William Berndt, a miner, aged fifty-one years, was killed instantly by mine wagons in the Excelsior mine, Clearfield county, on May 31. He was traveling from his work at night on the main heading road, and was overtaken by a trip of mine cars in a cutting about five feet deep. The cutting is narrow, and has a gentle grade with fall toward the mouth of drift, thereby causing the wagons to run quite speedily; however, at one side of the track where Mr. Berndt was killed there was room for a person to stand in safety and allow a trip of cars to pass. Unfortunately, the old man stepped to the narrow side of the track where there was only nine inches between the rock and cars. He was caught by the first car, then twisted between the first and second, and thrown under the second. One of the front wheels of the second car was resting upon his face, and he was dead when taken from under it. About thirteen yards back towards the working from where he was overtaken, where the road was wide, he allowed one trip of cars to pass, and ought to have stayed there until the second trip had passed also; but it is probable that he did not see the second trip coming. He was only two years from Germany, married, and leaves a widow and seven children.

ACCIDENT No. 28.—Oscar Richer, fourteen years of age, was fatally injured by a mine wagon at foot the incline plane at New Catfish mine, Clarion county, on the 14th of May. It seems that this boy and his younger brother were at the tipple at foot of incline plane getting their checks, and while there it seems that the checker lost control of the cars on the plane and allowed them to come down at great speed, going through the tipple and over into the Allegheny river. The wagon when passing over the platform at tipple struck the two boys so violently that Oscar died from the effects of his injuries, his younger brother recovering. This is one of those accidents that does not come under the mining law, but have taken a record of it, thinking that the law should be so amended so as to cover this class of accidents, and provide a remedy for their prevention.

### Remarks on Fatal Accidents.

The increase of fatal accidents this year is double that of last year. While coal mining lasts we need never expect to be able to prevent all of this class of fatalities, but certainly, if proper laws were enacted compelling the enforcement of all the remedies experience has taught us to prevent them, we, no doubt, could diminish their number; however, in the absence of a better, we must deal with the law as we have it. The present mining law makes the miner the judge of his own safety while working in his room, but makes the mining company responsible for furnishing him with the means with which to protect himself. If the company has performed its duty under the provisions of the act, then the miner is himself at fault for any injury received. On my investigation of fatal accidents Nos. 4, 12, 24, 39, 40, and 55, all were caused through gross neglect, and were by all means preventible accidents. A few of the others need not have occurred had due care been exercised. There is a cause for such gross negligence, and I attribute it partly to excitement and the lack of system, so prevalent among many miners while doing their work in the mine. Those who have had any experience with miners know that a large portion of them are naturally excitable, and from the time they enter the mine until they quit in the evening they are in a state of excitement, and their labor is performed in confusion. While in such a state, little thought is given toward their protection. Neither can they exercise that degree of watchfulness necessary to detect the hidden dangers of the mine that continually surround them. After a while, through such a mode of procedure, they become habituated to carelessness. The safety of their working-places is about the last thing thought of, and I do not wonder, under such a state of things, at so many accidents happening. I would urge upon all miners the necessity of devoting more time while at work to their own protection; to have more system in doing their work; see that the roof in their working-place is secured: that the props are kept well up to wall face; sound it often during the day; and as they extend their mining keep a sharp lookout for those false slips, and if their observation fails to detect any, sound the mined coal with their pick at intervals, and by all means never put off setting supports to the coal when needed. The utmost care should be exercised in working off hanging shots that have been fired in the coal. They should not sit down in front of the shot coal to mine until they have spragged it properly. It is always safer, however, to bar it down if possible, rather than run any danger, even if it be at the expense of much labor. If they have everything secured properly, then they can work in safety without fear, and can do more work than if it were otherwise.

The mining-boss is not free from responsibility in this matter. The intelligent foreman or boss will naturally take a deep interest in the protection of the miners under his charge and should visit their working-places often during the week, and whenever he observs negligence on the part of the workmen he should at once caution them against their danger. If such precautions as I have tried to indicate were observed, accidents would be fewer in our mines.

## INQUISITIONS ON FATAL ACCIDENTS.

PANCOAST, PA., *March 9, 1882.*

John Bishop, in Pancoast mine, was fatally injured from falling of coal, March 8, 1882. Said injuries resulting in death of said John Bishop.

Following are the witnesses:

HENRY WILLIAMS, *sworn:*

I reside at Pancoast, Jefferson county, Pennsylvania, and mining boss of Pancoast mine. I have been in and about mines twenty-five years. John J. Davis, William Clawson, and myself were measuring some of the rooms in mine yesterday, and when we came near to where John Bishop was working, we heard him holloing twice. We ran to him as fast as possible; found him laying down and a piece of coal weighing about four hundred pounds resting upon his legs. We lifted the coal off of him and asked him how long it had been since the coal fell. He said, "A long time." John Bishop's working-place was about eight hundred feet from mouth of drift John J. Davis brought a mine wagon and sat in it and held Mr. Bishop while we pushed the wagon out of mine. We called for the assistance of three other men when we came out of mine to help carry Mr. Bishop home. Got him home about half past ten o'clock, A. M.

(Signed) HENRY WILLIAMS.

JOHN J. DAVIS, *sworn:*

I am a miner and reside at Pancoast, Jefferson county, Pennsylvania. I am about forty-two years of age. I was with Mr. Henry Williams and Mr. William Clawson when I heard Mr. John Bishop holloing for help. I went in with Mr. Henry Williams and helped to lift coal off him. I think the lump of coal would weigh four hundred pounds. It took three of us to lift the coal off John Bishop. I assisted in carrying him to his house at half past ten o'clock, A. M., and staid with him until he died, at half past three o'clock, P. M., of same day. I helped to wash and lay him out, and found no bruise or wound except upon the right leg and a few slight bruises on the left leg. I thing that Mr. Bishop was seventy-two years of age.

(Signed) JOHN J. DAVIS.

WILLIAM CLAWSON, *sworn:*

I am a miner and twenty-five years of age, and reside at Pancoast, Jefferson county, Pennsylvania. I was along with Mr. Henry Williams and John J. Davis measuring the rooms yesterday, and, while so doing, I heard Mr. John Bishop calling for help. We ran into the place where Mr. Bishop was working and took the coal off his legs. I think the lump of coal would be about four hundred pounds. We put him in a car and took him out of the mine. I helped to carry him home at about half past ten o'clock, A. M.

(Signed) WILLIAM CLAWSON.

COMMONWEATH OF PENNSYLVANIA, SS:

An inquest, indented and taken at Pancoast, county of Jefferson, State of Pennsylvania, the 9th day of March, 1882, before me, Thomas Hutchinson, justice of the peace, acting coroner of the county aforesaid, upon viewing the body of John Bishop, there and then lying dead, and the oaths of F. M. Lucas, Francis Elder, William Simmons, John Lucas, Joseph Henderson, and M. J. Farrell, all good and lawful men of the county aforesaid, who, being duly sworn to inquire into, on the part of the Commonwealth, how, when, and after what manner the said John Bishop came to his death, do say, upon their oaths, that the said John Bishop met his death from an accidental fall of coal, causing injuries which, together with his weakened physical condition from old age, resulted in death. The said accident happening 8th day of March, 1882, the day of said John Bishop's death in Pancoast mine, belonging to Reynoldsville Coal Company, in township of Winslow, county and State aforesaid.

THOMAS HUTCHINSON,
*Justice of the Peace and acting Coroner.*
M. J. FARELL, *Foreman*, [SEAL.]
J. H. HENDERSON, [SEAL.]
F. M. LUCAS, [SEAL.]
WILLIAM SIMMONS, [SEAL.]
JOHN W. LUCAS, [SEAL.]
FRANCIS ELDER. [SEAL.]

STATE OF PENNSYLVANIA, } ss:
*County of Clearfield*, }

I certify that the following is a true and correct extract from report of coroner's inquest held on view of the body of William Berndt, killed on May 31, 1882, at Excelsior colliery, Woodward township, Clearfield county, Pa.:

"That the said William Berndt, while coming from his work in Excelsior colliery, was overtaken by the trip of cars and turned off on the narrow side of the track, and that the first car of the trip rolled him around, and as he fell under second car it passed over his head, causing death; and that said William Berndt, through his own neglect and the providence of God, came to his death, and not otherwise, and that no blame is attached to the owner or operators of said colliery, or to any of the employés at said colliery. In witness whereof, &c., &c.

(Signed)
JOHN B. MCGRATH,
*Ex-officio Coroner.*
EDWARD LEEK,
*Foreman.*
JOE HIGGINS,
SAMUEL FLENNER,
WILLIAM HILL,
JOHN WHITNEY,
JOHN RICHARDS,
*Jurors.*

Witness my hand and seal this 1st day of June, 1882.

JOHN B. MCGRATH,
*Justice Peace.*"

COMMONWEALTH OF PENNSYLVANIA, } ss:
*Clearfield county,* }

An inquisition, indented and taken at Webster colliery, in the county of Clearfield, the 27th day of July, in the year of our Lord, 1882, before J. M. Lehman, one of the justices of the peace in and for the county aforesaid, upon the view of the body of Joseph Petuch, then and there lying dead, upon the oaths of Isadore Simendinger, Julius Viebahn, William Reese, Peter Tanney, J. M. Livingood, and J. M. Garrett, good and lawful men of the county aforesaid, who, being sworn to inquire, on the part of the Commonwealth, when, where, how, and after what manner the said Joseph Petuch came to his death, do say, upon their oaths, that he came to his death on the 27th day of July, A. D. 1882, in Webster colliery, in the county aforesaid, by reason of a fall of coal, which fell on him and crushed his head. That no blame can be attached either to the Webster Coal Company or any of their employés. That his death was caused as above stated, and through his own negligence in not securing his place by all the necessary precautions that an experienced miner should use.

In witness whereof, as well the aforesaid justice, as the jurors aforesaid, have to this inquisition put their hands and seals, on the day and year, and at the place first above mentioned.

J. M. LEHMAN,
*Justice of the Peace.*

ISADORE SIMENDINGER, [SEAL.]
JULIUS VIEBAHN, [SEAL.]
WILLIAM REESE, [SEAL.]
PETER TANNEY, [SEAL.]
J. M. LIVINGOOD, [SEAL.]
J. M. GARRETT. [SEAL.]

*Clearfield county*, *ss:*

I hereby certify that the foregoing is a true and correct transcript of the inquisition on the body of Joseph Petuch.

Given under my hand and seal this 27th day of July, A. D. 1882.

J. M. LEHMAN, [SEAL.]
*Justice of the Peace.*

An inquisition, indented and taken at Webster colliery, in the county of Clearfield, the 23d day of October, in the year of our Lord, 1882, before me, J. M. Lehman, one of the justices of the peace in and for the county aforesaid, upon the view of the body of Robert Marsden, then and there lying dead, upon the oaths of Edward Leek, Patrick Donnely, Hiram Wilkins, Harvey Wilkins, Thomas Trimbath, and Michael Walker, good and lawful men of the county aforesaid, who, being sworn to inquire, on the part of the Commonwealth, when, where, how, and after what manner the said Robert Marsden came to his death, do say, upon their oaths, that the said Robert Marsden came to his death on the 23d day of October, A. D. 1882, in Webster colliery aforesaid, by reason of cars jumping off the track, and striking a set of timbers, which caused them to fall, which caused the earth over-head to fall upon him and suffocate him. That the timbers in the drift in said mine were, and are, not safe. That the passage between the cars and timbers, on each side, are too narrow for safety to the drivers. That the said Robert Marsden came to his death as above stated, and not otherwise.

In witness whereof, as well the aforesaid justice, as the jurors aforesaid, have to this inquisition put their hands and seals, on the day and year, and at the place first above mentioned.

J. M. LEHMAN, [SEAL.]
*Justice of the Peace.*
EDWARD LEEK, [SEAL.]
P. F. DONNELLY, [SEAL.]
HIRAM WILKINS, [SEAL.]
HARVEY WILKINS, [SEAL.]
THOMAS TRIMBATH, [SEAL.]
MICHAEL WALKER, [SEAL.]

## TABLE 1.—SHOWING LOCATION OF COLLIERIES IN THE THIRD BITUMINOUS MINE DISTRICT.

| NAME OF COLLIERY. | Name of Company. | Location—County. | Name of Superintendent. | Post-Office Address. |
|---|---|---|---|---|
| Allport, | Holt, Schoonover & Co., | Clearfield, | David Holt, | Philipsburg, Centre co. |
| Atlantic, | John Whitehead & Co., | do. | A. G. Spears, | Houtzdale. |
| Beaver, | Lee & Patterson, | Lawrence, | H. K. Hartsuff, | Rock Point P. O., Beaver co. |
| Beaver Run, | Beaver Run Coal Company, | Clearfield, | C. W. Hughes, | 136 Walnut street, Philadelphia. |
| Bethel, No. 4, | Bethel Coal Company, | Mercer, | Thomas Bailey, | Sharon. |
| Bucktail, No. 1, | Rochester, Pittsburgh Coal and Iron Company, | Jefferson, | Richard Woodward, | Beechtree P. O. |
| Bucktail, No. 2, | do. do. do. | do. | do. | do. |
| Chestnut Ridge, | Filer, Westerman & Co., | Mercer, | Enoch Filer, junior, | Grove City P. O. |
| Cameron, | Cameron Coal Company, | Cameron, | John Little, | Cameron. |
| Clermont, | Buffalo Coal Company, | McKean, | J. H. Tate, | Clermont. |
| Church Hill, | Church Hill Coal Company, | Clarion, | George Horner, | Monterey. |
| Coal Run, (old,) | W. J. Jackson, | Clearfield, | Thomas Young, | Osceola Mills. |
| Coal Run, (new,) | Ashland Coal Company, | do. | J. P. Colihan, | Houtzdale. |
| Clarion, | Clarion Coal Company, | Clarion, | W. W. Greenland, | Clarion. |
| Cascade, | Kaul & Hall, | Elk, | Andrew Kaul, | St. Mary's. |
| Colorado, | A. & W. H. Barlow, | Clearfield, | W. H. Barlow, | Philipsburg, Centre co. |
| Columbia, | Mitchell & Keller, | do. | J. L. Mitchell, | Osceola Mills. |
| Cody Ridge, | H. K. Grant, | do. | Stephen Sheldon, | Philipsburg, Centre co. |
| Clinton, | Clinton Coal Company, | Lawrence, | Charles Harmony, | Rock Point P. O., Beaver co. |
| Cranberry, | Oil City, Ridgway Railway and Mining Co., | Venango, | James Kennedy | Ten Mile Bottom P. O. |
| Coalport, | Coalport Coal Company, | Clearfield, | John Nicholson, | Coalport P. O. |
| Dagus, No. 1, | Northwestern Mining and Exchange Co., | Elk, | David Robertson, assist't, | Dagus Mines. |
| Dagus, No. 5, | do. do. do. | Elk, | do. do. | do. |
| Dagus, No. 7. | do. do. do. | Elk, | do. do. | do. |
| Dagus, No. 9, | do. do. do. | Elk, | do. do. | do. |
| Dagus, No. 11, | do. do. do. | Elk, | do. do. | do. |
| Decatur, | Decatur Coal Company, | Clearfield, | John Nuttall, | Philipsburg, Centre co. |
| Derby, | Thomas Barnes & Brother, | do. | Thomas Barnes, | do. do. |
| Davidson, | W. B. Enos & Co., | Lawrence, | W. B. Enos, | Wampum. |
| Eureka, (Elk,) | Daniel Eldridge & Co., | Elk, | D. Eldridge, | Dagus Mines. |
| Eureka, No. 1, | Berwind, White & Co., | Clearfield, | Peter Cameron, senior, | Houtzdale. |
| Eureka, No. 2, | do. do. | do. | do | do. |
| Eureka. No. 3, | do. do. | do. | Alfred Crist, | Osceola Mills. |
| Eureka, No. 4, | do. do. | do. | Peter Cameron, | Houtzdale. |
| Excelsior, | Fisher Bros. & Miller, | do. | Thomas Richards, | do. |
| Edinburg, | Mahoning Iron Company, | Lawrence, | Henry Bonnel, | Edenburg. |
| Egbert, | Filer, Westerman & Co., | Mercer, | Enoch Filer, senior, | Sharon. |
| Empire, | Empire Coal Company. | Clearfield, | John Ashcroft, | Philipsburg, Centre co. |
| Fairmount, No. 1, | Fairmount Coal and Iron Company, | Clarion, | | Fairmount. |
| Fairmount, No. 2, | do. do. | do. | | do. |
| Franklin, | Kittanning Coal Company, | Clearfield, | C. B. Findley, | Osceola Mills. |
| Falls Creek, | McConnell Brothers, | Jefferson, | James McConnell, | DuBois, Clearfield co. |
| Glenwood, | Huff & Co., | Clearfield, | C. Campbell, | Altoona, Blair co. |
| Griffith, | Egbert Coal Company, | Mercer, | S. B. Griffith, | Mercer. |
| Goss Run, | Berwind, White & Co., | Clearfield, | Peter Cameron, senior, | Houtzdale. |
| Hildrup, | Sandy Lick Coal Company, | do. | L. S. Hay, | DuBois, Clearfield co. |

| | | | | |
|---|---|---|---|---|
| Hardserable, | Brady's Bend Mining Company, | Clarion, | C. F. Hartwell, | Oil City. |
| Hamilton, | Hamilton Coal Company, | Jefferson, | Mr. Hamilton, | Sharon, Mercer county. |
| Hickory, | Hickory Coal Company, | Mercer, | Enoch Filer, Sr., | do. do. |
| Harrison, | Harrison Coal Company, | Clearfield, | W. Harrison, | Houtzdale. |
| Home Bank, No. 3, | Buhl, Westerman & Co., | Mercer, | D. Adams, | Sharon. |
| Hudson, | D. D. Dodge & Co., | Clearfield, | D. D. Dodge, | Philipsburg, Centre county. |
| Hawk's Run, | Jones, Mull & Co., | do. | Benjamin Jones, | do. do. |
| Hazzard, | Hazzard, Wood & Co., | Mercer, | Frank Hazzard, | Mercer. |
| Houtzdale, | Houtzdale Coal Company, | Clearfield, | C. W. Van Dusen, | Houtzdale. |
| Instanter, No. 1, | Buffalo Coal Company, | McKean, | J. H. Tate, | Clermont. |
| Instanter, No. 2, | do. do. | do. | do. | do. |
| Jackson Centre, | Jackson Coal Company, | Mercer, | John I. Gordon, | Mercer. |
| Keystone, | David Holt & Co., | Clearfield, | D. Holt, | Philipsburg, Centre county. |
| Lower Hillville, | Pittsburgh Coal and Mining Company, | Clarion, | L. N. Singley, | Catfish. |
| Lancashire, No. 1, | Thomas Barnes & Bro., | Clearfield, | Thomas Barnes, | Philipsburg, Centre county. |
| Lancashire, No. 2, | do. do. | do. | do. | do. do. |
| Lackawannock, | Pierce Coal Company, (Limited,) | Mercer, | James Pierce, | Sharpsville. |
| Laurel Run, No. 1, | Nuttall, Bacon & Co., | Clearfield, | John Nuttall, | Philipsburg, Centre county. |
| Laurel Run, No. 2, | do. do. | do. | do. | do. do. |
| Leonard, | Empire Coal Company, | do. | John Ashcroft, | do. do. |
| Logan, | H. J. Smith & Co., | do. | T. M. Simpson, | Osceola Mills. |
| Long Run, | Long Run Coal Company, | Clarion, | J. M. Brinker, | New Bethlehem. |
| Morrisdale, No. 7, | R. B. Wigton & Son, | Clearfield, | W. Wigton, | Morrisdale. |
| Morrisdale, No. 8, | do. do. | do. | do. | do. |
| Morrisdale, No. 10, | do. do. | do. | do. | do. |
| Morrisdale, Nos. 11 and 12, | do. do. | do. | do. | do. |
| Moshannon, No. 1, | Moshannon Coal Company, | do. | P. B. Zentmyre, | Houtzdale. |
| Moshannon, West, No. 2, | do. do. | do. | do. | do. |
| Mapleton, | Berwind, White & Co., | do. | W. A. Crist, | Osceola Mills. |
| Maple Grove, | P. S. McCalmont, | Venango, | Charles A. Kinney, | Raymilton. |
| Mineral Ridge, No. 1, | Mineral Ridge Coal Company, | Clarion, | C. W. H. Eiche, | Monterey. |
| Mineral Ridge, No. 2, | do. do. | do. | do. | do. |
| New Catfish, | Pittsburgh Coal and Mining Company, | do. | L. N. Singley, | Catfish. |
| Neshannock, | Phillips, Pierce & Co., | Mercer, | John Phillips, | Sharon. |
| New Virginia, | Perkins Iron Company, | do. | Samuel Perkins, | do. |
| Ormsby, | Ormsby Coal Company, | do. | Frank Hazzard, | Mercer. |
| Ocean, No. 1, | John Whitehead & Co., | Clearfield, | A. G. Spears, | Houtzdale. |
| Ocean, No. 2, | do. do. | do. | do. | do. |
| Penn, | Reakirt Bros. & Co., | do. | George Gould, | do. |
| Penn, | Penn Coal Company, | Lawrence, | W. B. Enos, | New Castle. |
| Pine Run, | Stephenson & Mitchell, | Clarion, | Thomas Mitchell, | East Brady. |
| Pardoe, | Mercer Mining and Manufacturing Company, | Mercer, | Richard Lewis, | Pardoe. |
| Pancoast, | Heim, Goodwell & Williams, | Jefferson, | J. C. Baker, | Pancoast. |
| Pacific Slope, | Dunham, Roberts & Co., | Mercer, | Warren Dunham, | Sharon. |
| Pacific, No. 1, | John Whitehead & Co., | Clearfield, | A. G. Spears, | Houtzdale. |
| Pacific, No. 2, | do. do. | do. | do. | do. |
| Pardee, | Duncan, Lingley & Co., | do. | W. C. Lingley, | Philipsburg, Centre county. |
| Red Bank, No. 1, | Alex Reynold's Sons, | Clarion, | David Reynolds, | Red Bank. |
| Red Bank, No. 2, | do. do. | do. | do. | do. |
| Rankin, | J. F. Filer & Co., | Mercer, | Enoch Filer, Sr., | Sharon. |
| Rochester, | Bell, Lewis & Yates, | Clearfield, | A. J. Mellugh, | DuBois. |

## TABLE I.—SECOND BITUMINOUS MINE DISTRICT—*Continued.*

| NAME OF COLLIERY. | Name of Company. | Location—County. | Name of Superintendent. | Post-Office Address. |
|---|---|---|---|---|
| Reading, | Henry Liveright, | do. | Henry Liveright, | Osceola Mills. |
| Riley Shaft, | Neshannock Coal Company, | Lawrence, | John Bell, | New Castle. |
| Soldier Run, | Powers, Brown & Co., | Jefferson, | James Powers, | Reynoldsville. |
| Sprague, | do. do. | do. | do. | do. |
| St. Mary's, | St. Mary's Coal Company, | Elk, | Joseph Patton, | St. Mary's. |
| Stoneboro', No. 2, | Mercer Iron and Coal Company, | Mercer, | Benjamin F. Esgar, | Stoneboro'. |
| Stoneboro', No. 3, | do. do. | do. | Herbert Edwards, | do. |
| Sterling, No. 1, | Robert H. Powell & Co., | Clearfield, | James Campbell, | Houtzdale. |
| Sterling, No. 2, | do. do. | do. | do. | do. |
| Sligo Branch, | Rimersburg Coal Company, | Clarion, | S. Coon, | Rimersburg. |
| Spring Hill, | A. B. Lueder. | Clearfield, | Daniel Kulp, | Philipsburg, Centre county. |
| Sharon Shaft, | Sharon Coal Company, | Mercer, | M. B. Hofius, | Grove City P. O. |
| Spears' Shaft, | Pine Grove Coal Company, | do. | James Spears, | do. do. |
| Tannerdale, | St. Mary's Coal Company, | Elk, | Jacob Anderson, | St. Mary's. |
| Victor, No. 1, | Victor Coal Company, | Clearfield, | D. Holt, | Philipsburg, Centre county. |
| Victor, No. 2, | do. do. | do. | do. | do. do. |
| Victor, No. 3, | do. do. | do. | do. | do. do. |
| Wise, No. 2, | Snyder Coal Company, | Mercer, | Enoch Filer, Sr., | Sharon. |
| Welsh, | Wampum Iron Company, | Lawrence, | F. H. Oliphant, | Wampum. |
| Washington, | Frank Williams, | Jefferson, | J. C. Baker, | Pancoast. |
| Williamsport, | Clearfield Coal Company, | Clearfield, | H. S. Bartlett, | Tyler Station. |
| Webster, A, | Webster Coal Company, | do. | Philip Hartman, | Houtzdale. |
| Webster, B, | do. do. | do. | do. | do. |

**TABLE II.**—*A Statement showing Characteristics, Number of Employés, Production, etc., of the respective Collieries in the Third Bituminous Mine District, for the year ended December, 1882.*

| NAME OF COLLIERY. | Character of Coal. (Bituminous or Semi-Bituminous.) | Slope, Shaft, or Drift. | Number of pumps. | Number of engines. | Horse power. | Number of boilers. | Number of miners—men. | Number of miners—boys. | Other employees. | Total employees. | Number of mules inside. | Number of mules outside. | Number of locomotives. | Total production of coal in tons. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beaver, | Bituminous, | Drift, | 2 | | | 1 | 83 | 14 | 27 | 124 | 8 | 5 | | 9,931 |
| Bethel, No. 4, | do. (block,) | Shaft, | 3 | 1 | 36 | 4 | 69 | 19 | 7 | 95 | 3 | | | 15,306 |
| Cameron, | do. | | | | | | | | | | | | | |
| Cascade, | do. | Drift, | | | | | 67 | 10 | 10 | 87 | 4 | | 1 | 29,760 |
| Chestnut Ridge, | do. | Shaft, | 2 | 1 | 33 | 3 | 41 | 7 | 4 | 52 | 9 | 2 | | 5.950 |
| Clermont, | do. | Drift, | | | | | 39 | 4 | 12 | 55 | 5 | 1 | 1 | 19,116 |
| Clinton, | do. | Drift, | | | | | 47 | 10 | 16 | 73 | 5 | 5 | | 22 192 |
| Coalport, | do. | Drift, | | | | | 32 | 5 | 4 | 41 | 2 | | | |
| Cody Ridge, | do. | Drift, | | | | | 35 | 3 | 3 | 41 | 2 | 1 | | 3.000 |
| Colorado, | do. | Drift, | | | | | 46 | 6 | 7 | 59 | 2 | 2 | | 39,610 |
| Columbia, | do. | Drift, | | | | | 33 | 3 | 4 | 40 | 2 | 1 | | 6 332 |
| Cranberry, | do. | Drift, | | | | | 13 | 3 | 7 | 23 | 1 | 1 | | |
| Dagus, | do. | Drift, | 2 | 4 | 140 | 9 | 284 | 31 | 31 | 346 | 19 | 5 | | 231 209 |
| Davidson, | do. | Drift, | | | | | 45 | 12 | 14 | 71 | 6 | 3 | | 8 941 |
| Decatur, | do. | Drift, | | | | | 37 | 11 | 5 | 53 | 4 | 3 | | 53,465 |
| Derby, | do. | Drift, | | | | | 24 | 1 | 4 | 29 | 4 | 3 | | 1,950 |
| Diamond, | do. | Drift, | | | | | 23 | 1 | 6 | 30 | 3 | | | 2 000 |
| Edenburg, | do. | Drift, | | | | | 35 | 8 | 10 | 53 | 4 | | | 4 000 |
| Empire, | do. | Drift, | 1 | | | | 86 | 11 | 5 | 102 | 6 | 1 | | 69.388 |
| Eureka, No. 2, (Clearfield,) | Semi-bituminous, | Drift, | | | | | 220 | 8 | 23 | 251 | 14 | 10 | | 29,269 |
| Eureka, (Elk,) | Bituminous, | Slope, | | 1 | 65 | 2 | 75 | 6 | 13 | 94 | 2 | | | 12,292 |
| Excelsior, | do. | Drift, | | | | | 138 | 24 | 11 | 173 | 11 | 9 | | 105,500 |
| Fairmount, No. 2, | do. | Drift, | | | | | 133 | 10 | 18 | 161 | 7 | 3 | | |
| Falls Creek, | do. | Drift, | | | | | 27 | | 8 | 35 | 2 | | | 3,000 |
| Franklin, | do. | Drift, | | | | | 138 | 12 | 38 | 188 | 21 | 1 | 1 | 33.109 |
| Glenwood, | do. | Drift, | | | | | 39 | 7 | 9 | 55 | 4 | 2 | | 42 548 |
| Goss Run, | Semi-Bituminous, | Drift, | | | | | 46 | 8 | 7 | 61 | 3 | 3 | | 31 369 |
| Hamilton, | Bituminous, | Drift, | | | | | 90 | 6 | 16 | 112 | 9 | 2 | | 60 000 |
| Hardscrabble, | do. | Drift, | | | | | 72 | 10 | 11 | 93 | 5 | | | 35 500 |
| Harrison, | do. | Drift, | | | | | 44 | 6 | 7 | 59 | 4 | | | 48 432 |
| Hazzard's, | do. | Slope, | | 2 | 60 | 2 | 39 | 4 | 8 | 42 | 3 | | | 2 000 |
| Hickory, | do. (block,) | Shaft, | 4 | 1 | 38 | 4 | 30 | 2 | 12 | 44 | 5 | | | 17,430 |
| Hildrup, | do. | Drift, | | | | | 111 | 19 | 16 | 146 | 11 | 3 | | |
| Hillville, | do. | Drift, | 1 | 1 | 100 | 2 | 44 | 5 | 6 | 55 | 3 | | | 10,211 |

## TABLE II—*Continued.*

| NAME OF COLLIERY. | Character of Coal. (Bituminous or Semi-Bituminous.) | Slope, Shaft, or Drift. | Number of pumps. | Number of engines. | Horse power. | Number of boilers. | Number of miners—men. | Number of miners—boys. | Other employees. | Total employees. | Number of mules inside. | Number of mules outside. | Number of locomotives. | Total production of coal in tons. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Instanter, No. 1, | do. | Drift, | ... | ... | ... | ... | 39 | 3 | 7 | 49 | 3 | 1 | ... | 22,434 |
| Instanter, No. 2, | do. | Drift, | ... | ... | ... | ... | 33 | 6 | 6 | 45 | 2 | ... | ... | 23.146 |
| Jackson Centre, | do. | Drift, | . | . | | .. | 20 | 9 | 8 | 37 | 2 | 3 | .. | 800 |
| Koonce, | do. (block,) | Shaft, | 1 | 1 | 20 | 2 | 24 | 14 | 12 | 50 | 1 | 1 | .. | 1 572 |
| Lackawannock, | do. (block,) | Shaft, | 6 | 1 | 40 | 6 | 96 | 12 | 9 | 117 | 5 | .. | .. | 36 288 |
| Lancashire, | do. | Drift, | ... | .. | ... | ... | 115 | 8 | 14 | 137 | 8 | 2 | . | 107.338 |
| Laurel Run, | do. | Drift, | ... | ... | ... | ... | 54 | 10 | 8 | 72 | 7 | 3 | . | 74,265 |
| Leonard, | do. | Drift, | ... | ... | ... | ... | 29 | 6 | 2 | 37 | 1 | 2 | .. | 3,690 |
| Lower Hillville, | do. | Drift, | ... | ... | ... | .. | 42 | 4 | 2 | 48 | 4 | .. | | 1,518 |
| Maple Grove, | do. | Drift, | .. | ... | ... | .. | 32 | 3 | 10 | 45 | 3 | 1 | 1 | 4,768 |
| Mapleton, | Semi-bituminous, | Drift, | .. | ... | ... | . | 41 | 2 | 11 | 54 | 6 | 2 | | |
| Morrisdale, | Bituminous, | Drift, | .. | ... | ... | . | 100 | 15 | 12 | 127 | 5 | 2 | ... | 10 000 |
| Moshannon, No. 1, | do. | Drift, | .. | ... | ... | .. | 42 | ... | 8 | 50 | 8 | 1 | ... | 6 682 |
| Mount Hope, | do. | Drift, | | | . | | 30 | 2 | 8 | 40 | 3 | ... | 1 | 3 000 |
| Neshannock, | do. (block,) | Shaft, | 1 | 1 | 33 | 5 | 34 | 3 | 7 | 44 | 3 | ... | ... | 2 874 |
| New Catfish, | do. | Drift, | 1 | 1 | 100 | 2 | 66 | 5 | 10 | 81 | 5 | ... | ... | 16,261 |
| New Virginia, | do. (block,) | Shaft, | 2 | 1 | 40 | 3 | 63 | 25 | 16 | 104 | 2 | .. | ... | 8 100 |
| Oakland, No. 3, | Semi-bituminous, | Shaft, | 3 | 1 | 37 | 4 | 21 | 4 | 7 | 32 | 2 | ... | ... | 2 647 |
| Ormsby, | Bituminous, | Shaft, | 1 | 3 | 50 | 2 | 69 | 13 | 10 | 92 | 6 | . | .. | 43,452 |
| Pancoast, | do. | Drift, | ... | .. | ... | ... | 25 | 5 | 9 | 39 | 3 | | | 25 032 |
| Pardoe, | do. | Drift, | 2 | 1 | 50 | 3 | 94 | ... | 23 | 117 | 11 | 1 | 1 | |
| Pine Run, | do. | Drift, | ... | ... | .. | .. | 99 | 18 | 17 | 134 | 4 | 3 | | 43 760 |
| Rankin, | do. (block,) | Shaft, | 3 | 1 | 50 | 3 | 45 | 16 | 12 | 73 | 3 | 3 | .. | 22 292 |
| Red Bank, No. 1, | do. | Drift, | .. | .. | ... | ... | 40 | 10 | 15 | 65 | 5 | 3 | ... | 21.015 |
| Red Bank, No. 2, | do. | Drift, | ... | .. | ... | .. | 17 | 5 | 5 | 27 | 1 | 1 | ... | 7 205 |
| Rochester, | do. | Drift, | . | . | ... | ... | 250 | 20 | 35 | 305 | 18 | ... | .. | 17.959 |
| Sharon, | do. | Shaft, | 2 | 1 | 25 | 2 | 36 | 5 | 8 | 49 | 3 | .. | ... | 3 400 |
| Sligo Branch, | do. | Drift, | .. | .. | ... | ... | 19 | ... | 3 | 22 | 1 | ... | . | 800 |
| Soldier Run, | do. | Drift, | ... | ... | ... | ... | 105 | 8 | 12 | 125 | 11 | | | |
| Sprague, | do. | Drift, | ... | ... | ... | ... | 56 | 4 | 5 | 65 | 3 | | | |
| St. Mary's, | do. | Drift, | .. | .. | .. | . | 88 | 17 | 18 | 123 | 4 | 3 | | 74.066 |
| Sterling, No. 1, | Semi-bituminous, | Drift, | 2 | 1 | 16 | 2 | 230 | 30 | 29 | 289 | 28 | .. | 1 | 223 495 |
| Sterling, No. 2, | do. | Drift, | .. | 1 | 12 | 1 | 117 | 12 | 11 | 140 | 7 | ... | 1 | 96.186 |
| Stoneboro', No. 2, | Bituminous, | Slope, | 1 | 1 | 50 | 1 | 124 | 22 | 24 | 170 | 14 | .. | . | 71.588 |
| Stoneboro', No. 3, | do. | Slope, | 1 | 1 | 50 | 2 | 49 | 6 | 6 | 61 | 3 | .. | ... | 30,711 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Washington, | do. | Drift, | ... | ... | . | . | 32 | 4 | 9 | 45 | 4 | .. | ... | 27,239 |
| Webster, A, | Semi-bituminous, | Drift, | ... | .... | .. | . | 77 | 23 | 23 | 123 | 5 | 3 | | 4 000 |
| Webster, B, | do. | Drift, | .. | .. | ... | . | 109 | 23 | 24 | 156 | 6 | 4 | .. | 5 065 |
| Welsh, | Bituminous, | Drift, | .. | .. | | | 54 | 4 | 13 | 71 | 4 | .. | ... | 23 261 |
| West Moshannon, | do. | Drift, | | 1 | 80 | 2 | 151 | 15 | 22 | 198 | 12 | ... | . | 40,719 |
| Wheeler, | do. | Shaft, | 2 | 1 | 20 | 2 | 28 | 5 | 16 | 49 | 2 | .. | .. | 1,516 |
| Wise, No. 2, | do. (block,) | Shaft, | .. | . | . | . | 21 | 2 | 3 | 26 | 1 | | | |

**TABLE III.**—*A statement showing the method of ventilation, amount of air discharged, number of openings and headings. and size of inlets and outlets in the respective collieries of the Third Bituminous Mine District.*

| NAME OF COLLIERY. | How ventilated. | Diameter of fan in feet. | Size of furnace. | Amount of air discharged per minute. | Number of openings. | Number of headings. | Inlet—size of—square feet. | Outlet—size of—square feet. |
|---|---|---|---|---|---|---|---|---|
| Atlantic, | Furnace, | ... | 3′ x 4′ | 4.000 | 2 | 3 | 42 | 25 |
| Beaver, | Furnace, | ... | 7 x 5 | 15,000 | 3 | 4 | 30 | 24 |
| Beaver Run, | Natural, | ... | ... | 2,000 | 2 | 2 | 60 | 30 |
| Bethel, No. 4, | Exhaust steam, | ... | ... | 6 000 | 2 | 3 | 112 | 16 |
| Chestnut Ridge, | Exhaust steam, | ... | ... | 7.820 | 2 | 2 | 48 | 30 |
| Cameron, | Furnace, | ... | 3 x 2½ | 9,000 | 2 | 3 | 30 | 20 |
| Clermont, | Furnace, | ... | 3 x 4 | 6,738 | 3 | 3 | 33 | 20 |
| Church Hill, | Furnace, | ... | 2 x 3 | 2,000 | 2 | 2 | 42 | 16 |
| Cascade, | Furnace, | . | 4 x 6 | 10 000 | 2 | 4 | 42 | 24 |
| Colorado, | Furnace, | ... | 5 x 6 | 12,347 | 2 | 5 | 45 | 55 |
| Columbia, | Furnace, | ... | 5 x 3⅔ | 15,220 | 2 | 2 | 40 | 20 |
| Cody Ridge, | Furnace, | ... | 2 x 3 | 5.500 | 2 | 2 | 42 | 30 |
| Clinton, | Furnace, | ... | 4 x 6 | 5 000 | 2 | 3 | 36 | 30 |
| Cranberry, | Furnace, | ... | 5 x 6 | 5,000 | 2 | 2 | 36 | 24 |
| Coalport, | Basket, | | 2 x 3 | 5.000 | 2 | 2 | 36 | 20 |
| Dagus, No. 1, | Fan,* | 16′ | ... | 12,200 | 2 | 2 | 30 | 33 |
| Dagus, No. 5, | ... | ... | ... | 12.300 | 2 | 3 | 30 | 33 |
| Dagus, No. 7, | Furnace, | ... | 3 x 6 | 9.300 | 2 | 4 | 30 | 30 |
| Dagus, No. 9, | Furnace, | ... | 3 x 6 | 9.000 | 2 | 4 | 30 | 30 |
| Decatur, | Furnace, | ... | 5 x 6 | 6.700 | 3 | 5 | 36 | 40 |
| Derby, | Furnace, | ... | 3 x 4 | 2,000 | 2 | 2 | 36 | 24 |
| Eureka, (Elk,) | Furnace, | .. | 4 x 6 | 10 000 | 2 | 3 | 42 | 30 |
| Eureka, No. 2, (Clearfield,) | Furnace, | ... | 5 x 6 | 14 000 | 2 | 7 | 84 | 36 |
| Eureka, No. 3, | Basket, | .. | 2 x 3 | 2,000 | 2 | 2 | 42 | 20 |
| Excelsior, | Furnace, | . | 5¾ x 3¾ | 20 000 | 2 | 4 | 36 | 36 |
| Egbert, | Basket, | ... | 2 x 3 | 3 000 | 2 | 2 | 42 | 24 |
| Empire, | Furnace, | ... | ... | 10 000 | 2 | 6 | 42 | 20 |
| Fairmount, No. 1, | Furnace, | ... | 3 x 5 | 11 025 | 3 | 5 | 49 | 36 |
| Franklin, | Furnace, | ... | 6 x12 | 32,700 | 4 | 4 | 97 | 60 |
| Glenwood, | Furnace, | .. | 5 x 5 | 20,100 | 2 | 3 | 35 | 68 |
| Goss Run, | Furnace, | ... | 3 x 6 | 13 950 | 2 | .. | 56 | 36 |
| Hildrup, | Furnace, | ... | 8¼ x 6½ | 17,522 | 3 | 7 | 48 | 48 |
| Hardscrabble, | Furnace, | ... | 3 x 4 | 7.500 | 4 | 5 | 59 | 40 |
| Hamilton, | Furnace, | ... | 2¾ x 5 | 10.575 | 2 | 1 | 80 | 30 |
| Harrison, | Furnace, | ... | 2½ x 5 | 4,095 | 2 | 1 | 38 | 21 |
| Hickory, | Exhaust steam, | .. | ... | 5.000 | 2 | .. | 24 | 114 |
| Home Bank, No. 3, | Exhaust steam, | ... | ... | 2 000 | 1 | 2 | 106 | 24 |
| Hazzard, | Furnace, | . | 3½ x 4 | 4,000 | 2 | 3 | 42 | 24 |
| Instanter, No. 1, | Furnace, | ... | 4 x 4 | 6 885 | 3 | 2 | 38 | 27 |
| Instanter. No. 2, | Furnace, | ... | 5 x 7 | 8,750 | 3 | 3 | 30 | 35 |
| Jackson Centre, | Furnace, | ... | 4¾ x 4¾ | 3.500 | 2 | 1 | 36 | 30 |
| Lower Hillville, | Natural, | .. | ... | 7.350 | 2 | 1 | 49 | 42 |
| Lancashire, No. 1, | Furnace, | ... | 4½ x 4½ | 11,000 | 2 | 6 | 38 | 20 |
| Lackawannock, | Exhaust steam, | ... | ... | 9.000 | 2 | 3 | 50 | 50 |
| Laurel Run, No. 1, | Furnace, | ... | 5 x 6 | 8 600 | 3 | 6 | 24 | 40 |
| Leonard, | Natural, | ... | ... | 4.000 | 2 | 2 | 40 | 30 |
| Logan, | Furnace, | . | 5 x 5 | 12,000 | 2 | 2 | 10 | 30 |
| Morrisdale, No. 10, | Furnace, | ... | 4¼ x 6 | 14,000 | 3 | 3 | 36 | 30 |
| Morrisdale, No. 8, | Furnace, | ... | 4 x 6 | 10.000 | 2 | .. | 42 | 30 |
| Morrisdale, No. 7, | Furnace, | .. | 4¼ x 6 | 6,000 | 2 | . | 30 | 30 |
| Moshannon, No. 1, | Furnace, | ... | 3½ x 5 | 18,000 | 3 | 4 | 42 | 30 |
| Moshannon, No. 2, | Furnace, | ... | 3¾ x 7 | 9 075 | 2 | 2 | 45 | 30 |
| Mapleton, | Furnace, | ... | 4 x 5¼ | 8,040 | 3 | 3 | 72 | 48 |
| Maple Grove, | Furnace, | ... | 4 x 6 | 12 262 | 3 | 1 | 30 | 30 |
| Mineral Ridge, No. 1, | ... | ... | 3½ x 5 | 6 000 | 3 | 2 | 42 | 30 |
| Neshannock, | Exhaust steam, | ... | ... | 2 000 | 2 | 3 | 96 | 30 |
| New Virginia, | Exhaust steam, | ... | ... | 9,000 | 2 | 3 | 96 | 32 |
| New Catfish, | Natural, | ... | ... | 7,697 | 2 | 1 | 45 | 42 |
| Ormsby, | Fan, | 8′ | ... | 20.000 | 2 | 5 | 91 | 32 |
| Ocean, No. 1, | Furnace, | ... | 4 x 7 | 13 000 | 3 | 3 | 80 | 52 |
| Ocean, No. 2, | Exhaust steam, | ... | ... | 4.000 | 1 | 2 | 114 | 40 |
| Penn, | Natural, | ... | ... | 2 000 | 2 | ... | 36 | 30 |
| Pine Run, | Basket, | | 2′ x 2′ | 5,863 | 3 | 3 | 42 | 35 |
| Pardoe, | Fan, | 8′ | ... | 27,100 | 2 | 5 | 40 | 36 |

* This fan ventilates No. 5 mine also.

**TABLE III.**—*Continued.*

| Name of Colliery. | How ventilated. | Diameter of fan in feet. | Size of furnace. | Amount of air discharged per minute. | Number of openings. | Number of headings. | Inlet—size of—square feet. | Outlet—size of—square feet. |
|---|---|---|---|---|---|---|---|---|
| Pancoast, | Furnace, | ... | 4 x 4 | 6,090 | 2 | 2 | 42 | 42 |
| Pacific Slope, | Furnace, | | 2¾ x 2¾ | 5 000 | 2 | ... | 48 | 20 |
| Pacific, No. 1, | Furnace, | ... | 5 x 5 | 10 000 | 2 | 4 | 42 | 30 |
| Red Bank, No. 1, | Natural, | ... | ... | 6.188 | 4 | 2 | 68 | 61 |
| Rankin, | Exhaust steam, | | ... | 1.518 | 2 | ... | 32 | 12 |
| Rochester, | Fan, (double,) | 6′ | ... | 50,000 | 3 | 16 | 84 | 30 |
| Reading, | Furnace, | ... | 4 x 5 | 8 000 | 2 | 2 | 36 | 30 |
| Riley Shaft, | Exhaust steam, | ... | ... | 2.000 | 2 | 1 | 70 | 20 |
| Soldier Run, | Furnace, | ... | 3½ x 6 | 13 300 | 3 | 3 | 35 | 35 |
| Sprague, | Furnace, | ... | 5 x 6 | 7,800 | 2 | 2 | 49 | 48 |
| St. Mary's, | Furnace, | ... | 4½ x 5 | 11.138 | 2 | 1 | 54 | 54 |
| Stoneboro', No. 2, | Furnace, | ... | 4½ x 6½ | 17,362 | 5 | 4 | 91 | 30 |
| Stoneboro', No. 3, | Exhaust steam, | ... | ... | 5,750 | 2 | 2 | 42 | 25 |
| Sterling, No. 1, | Furnace, | ... | 6 x12 | 51,000 | 9 | 16 | 180 | 205 |
| Sterling, No. 2, | Furnace, | ... | 3 x 6 | 22 800 | 6 | 12 | 84 | 85 |
| Sligo Branch, | Furnace, | ... | 3 x 6 | 7,500 | 2 | 1 | 36 | 24 |
| Sharon Shaft, | Exhaust steam, | ... | ... | 3.000 | 2 | 2 | 114 | 80 |
| Tannerdale, | Furnace, | ... | 4 x 4 | 2,500 | 2 | 2 | 42 | 24 |
| Victor, No. 1, | Furnace, | ... | 4 x 5 | 8 000 | 3 | 3 | 42 | 30 |
| Wise, No. 2, | Exhaust steam, | ... | ... | 2,429 | 2 | ... | 104 | 28 |
| Welsh, | Furnace, | ... | 4 x 6 | 4,000 | 2 | ... | 30 | 30 |
| Washington, | Natural, | ... | ... | 5,880 | 2 | 3 | 42 | 42 |
| Webster, (A,) | Furnace, | ... | 3¼ x 5½ | 10 000 | 2 | 3 | 42 | 30 |
| Webster, (B,) | Furnace, | ... | 3¼ x 5½ | 10,000 | 2 | 4 | 35 | 30 |

**TABLE IV.**—*Showing an average monthly statement of the ventilation of the respective collieries in the Third Bituminous Mine District during the year 1882.*

| NAME OF COLLIERY. | JANUARY. | | | | | | FEBRUARY. | | | | | | MARCH. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Bethel, No. 4, | ... | .... | | .. | .. | | ... | ..... | . | .... | . | .. | 275 | 5, 775 | ... | ... | 350 | 6, 300 |
| Cascade, | 215 | 9.030 | 310 | 7.440 | 300 | 9.000 | | | | | | | | | | | | |
| Clermont, | 150 | 4.550 | 110 | 1.980 | 300 | 5.700 | 115 | 3,795 | 108 | 1.935 | 325 | 6 256 | 115 | 3,795 | 105 | 1, 890 | 338 | 6 414 |
| Clinton, | 125 | 9 000 | 126 | 7, 575 | 400 | 12, 000 | 128 | 9, 225 | 134 | 8 025 | 383 | 11 475 | 144 | 10, 365 | 134 | 8. 025 | 463 | 13. 875 |
| Colorado, | 246 | 11 059 | 241 | 13 266 | 211 | 11 584 | 249 | 11. 183 | 243 | 12 238 | 213 | 11 715 | 253 | 11, 375 | 243 | 13. 379 | 221 | 12. 169 |
| Dagus, No. 1, | 361 | 10, 838 | 174 | 8. 213 | 466 | 16. 785 | 385 | 10, 725 | 256 | 7, 688 | 440 | 15. 840 | 354 | 10, 612 | 234 | 7 012 | 254 | 9. 135 |
| Dagus, No. 4, | 163 | 4. 875 | 174 | 8 213 | 480 | 17. 280 | 158 | 4, 725 | 256 | 7 688 | 440 | 15 840 | 170 | 5 100 | 234 | 7. 012 | 254 | 9 135 |
| Dagus No. 5, | 276 | 8 288 | 258 | 7 725 | 294 | 8 813 | 266 | 7, 988 | 225 | 4 725 | 278 | 8. 325 | 281 | 8, 437 | 219 | 4 594 | 294 | 8 812 |
| Dagus. No. 6, | 245 | 7. 350 | 186 | 3. 911 | 401 | 8. 426 | 225 | 6, 750 | 191 | 4:016 | 374 | 7. 849 | 231 | 6. 937 | 178 | 3 727 | 389 | 8. 154 |
| Davidson, | 126 | 6. 690 | 78 | 2, 713 | 184 | 6 615 | 124 | 6. 561 | 73 | 2 537 | 178 | 6. 390 | 121 | 6, 393 | 73 | 2 537 | 179 | 6. 335 |
| Decatur, | 111 | 4. 005 | 145 | 4, 640 | 145 | 5, 800 | 106 | 3, 807 | 143 | 4, 720 | 146 | 5, 850 | 140 | 5, 040 | 127 | 4 064 | 133 | 5, 300 |
| Diamond, | 105 | 5 145 | | | | | | | | | | | | | | | | |
| Edenburg, | 163 | 5. 850 | 103 | 3 690 | 230 | 5 175 | 125 | 4, 500 | 64 | 2, 790 | 201 | 4 568 | | | | | | |
| Empire, | 150 | 6 000 | 200 | 5 000 | 300 | 8, 000 | | | | | | | 80 | 3 000 | | | 400 | 7. 600 |
| Excelsior, | 193 | 10. 395 | 183 | 11 680 | 540 | 19. 440 | 238 | 12, 798 | 205 | 13 120 | 613 | 22 050 | 338 | 23. 625 | 245 | 10, 290 | 590 | 21, 240 |
| Glenwood, | 194 | 6 781 | 130 | 3, 380 | 335 | 20 100 | 194 | 6, 781 | 130 | 3, 380 | 335 | 20, 100 | 194 | 6, 781 | 130 | 3 380 | 335 | 20, 100 |
| Hamilton, | 152 | 13 960 | 190 | 7. 600 | 197 | 14 590 | | | | | | | 167 | 14 680 | 180 | 7 200 | 200 | 15. 630 |
| Hardscrabble, | 98 | 5. 754 | 50 | 4, 860 | 92 | 3 675 | 97 | 5 727 | 55 | 5 280 | 94 | 3 750 | 96 | 5 679 | 54 | 5. 220 | 99 | 3. 950 |
| Hickory, | 479 | 9, 575 | 191 | 8 575 | 319 | 9. 575 | 460 | 9 200 | 184 | 8, 200 | 307 | 9 200 | 468 | 9. 375 | 186 | 8, 375 | 311 | 9. 335 |
| Hildrup, | 295 | 13. 160 | 219 | 10. 500 | 301 | 14. 460 | 283 | 12 760 | 193 | 9 240 | 305 | 14 640 | 293 | 14 052 | 186 | 8 960 | 317 | 15. 024 |
| Hillville, | 166 | 7 482 | 169 | 7, 088 | 170 | 7. 140 | 164 | 7. 369 | 165 | 6. 930 | 200 | 8. 400 | 202 | 9. 112 | 179 | 7, 507 | 218 | 9, 135 |
| Instanter, No. 1, | 110 | 4, 325 | 105 | 2. 205 | 250 | 6 750 | 105 | 4. 042 | 105 | 2, 752 | 255 | 6 885 | 110 | 2, 310 | 115 | 4 428 | 265 | 7, 155 |
| Instanter, No. 2, | 150 | 4, 550 | 150 | 3 750 | 200 | 7 000 | 255 | 7, 650 | 313 | 6 563 | 250 | 8. 750 | 238 | 4, 987 | 218 | 6, 525 | 255 | 8, 925 |
| Jackson Centre, | | | | | | | 321 | 9, 637 | 225 | 5, 400 | 281 | 8 438 | | | | | | |
| Koonce. | 305 | 7. 320 | 230 | 6 900 | 280 | 6 720 | | | | | | | | | | | | |
| Lackawannock, | 216 | 10 350 | 181 | 9, 934 | 185 | 9. 250 | 199 | 9 540 | 183 | 9. 156 | 190 | 9. 562 | 197 | 9. 843 | 188 | 9 406 | 172 | 9 456 |
| Lancashire, | 213 | 8 000 | 150 | 6 000 | 550 | 11. 000 | 200 | 8 000 | 114 | 4 000 | 525 | 10, 500 | 208 | 8, 000 | 171 | 6 000 | 494 | 10. 000 |
| Laurel Run, | 369 | 12, 538 | 99 | 3, 555 | 288 | 11, 500 | 300 | 10, 200 | 101 | 3, 645 | 256 | 10, 250 | 238 | 8 075 | 140 | 3 600 | 225 | 9. 000 |
| Leonard, | ... | ..... | ... | ..... | .. | .... | ... | ..... | .. | .... | .... | ..... | 230 | 8, 050 | 200 | 4, 000 | 300 | 8. 060 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maple Grove, | | . . . | | | | . . | 201 | 6,030 | 83 | 5.047 | 347 | 10,417 | 191 | 5.730 | 83 | 4,905 | 350 | 10.500 |
| Mapleton, | 81 | 5 820 | 125 | 4.500 | 170 | 8.160 | 77 | 5,520 | 110 | 3,960 | 163 | 7.800 | 89 | 6,460 | 129 | 4,635 | 173 | 8 280 |
| Morrisdale, | 291 | 15.687 | | | 609 | 29.220 | | | | | | | | | | | | |
| New Catfish, | 190 | 8 550 | 199 | 8 348 | 203 | 9,290 | 196 | 8 431 | 203 | 8 565 | 225 | 8.100 | 172 | 7,751 | 177 | 7.434 | 205 | 7 380 |
| Oakland, No. 3, | 135 | 5,175 | 101 | 2,126 | 156 | 5 135 | 145 | 5,558 | 128 | 2 673 | 168 | 5,747 | 145 | 5.558 | 110 | 2,310 | 164 | 5 230 |
| Ormsby, | . . . | | | | | | | | | | . . . | | 1,800 | 25.200 | 300 | 4.800 | 173 | 18 000 |
| Pancoast, | 133 | 5,505 | 111 | 5,006 | 134 | 5,617 | 128 | 5 355 | 102 | 4.612 | 140 | 5 880 | 128 | 5,355 | 109 | 4,894 | 133 | 5 565 |
| Pardoe, | . . . | | | | | | 694 | 27.770 | 183 | 27.375 | 772 | 27 774 | | | | | | |
| Pine Run, | 175 | 7,455 | 90 | 3 780 | 158 | 5,513 | 180 | 7,560 | 95 | 3,990 | 160 | 5,600 | | | | | | |
| Rankin, | 256 | 11.531 | 137 | 4.670 | 242 | 9 206 | | | | | | | 325 | 14.636 | 309 | 9.262 | 309 | 9.263 |
| Red Bank, | 119 | 8 098 | 101 | 4 829 | 112 | 6.839 | 124 | 8.441 | 74 | 3.428 | 116 | 7.060 | 99 | 6.732 | 117 | 5.517 | 146 | 8 906 |
| Soldier Run, | 155 | 12 986 | 132 | 11 390 | 370 | 19.500 | 163 | 11 375 | 134 | 11.813 | 382 | 13.358 | 157 | 13 169 | 113 | 11 250 | 347 | 12 081 |
| Sterling, No. 1, | 246 | 35 945 | 139 | 10 365 | 238 | 37.490 | 223 | 35.600 | 80 | 11.780 | 209 | 37,900 | 268 | 27.635 | 148 | 16 900 | 259 | 33 240 |
| Sterling, No. 2. | 183 | 23 078 | 111 | 14 860 | 220 | 25.693 | 308 | 14 760 | 118 | 4 700 | 236 | 14 662 | 223 | 10 902 | 88 | 5,250 | 223 | 16.020 |
| Stoneboro', No. 2, | 162 | 13.126 | 113 | 8 904 | 556 | 16.688 | 170 | 13 748 | 174 | 15 625 | 623 | 18 825 | 163 | 13.800 | 189 | 17.075 | 608 | 18.225 |
| Stoneboro', No. 3, | 150 | 6,200 | 92 | 4 245 | 248 | 5.569 | 110 | 4 599 | 124 | 2,475 | 220 | 4.950 | 121 | 5 092 | 140 | 3 056 | 213 | 5.325 |
| St. Mary's, | 206 | 11.111 | 205 | 9 828 | 205 | 11 043 | 208 | 11.232 | 206 | 9 900 | 205 | 11.111 | 206 | 11,137 | 206 | 9 888 | 205 | 11.097 |
| Washington, | 129 | 5 407 | 108 | 4 838 | 126 | 5 313 | 125 | 5 250 | 100 | 4.500 | 125 | 5 250 | 126 | 5,320 | 99 | 4,544 | 129 | 5,407 |
| Webster, A, | 258 | 11.587 | 210 | 8.820 | 555 | 16 650 | 261 | 11 756 | 210 | 8 820 | 548 | 16 425 | | | | | | |
| Webster, B, | 283 | 12.995 | 173 | 6,900 | 085 | 18 495 | 270 | 12 420 | 176 | 7,050 | 656 | 17 719 | | | | | | |
| Welsh, | 145 | 4 350 | | | 140 | 4.208 | 144 | 4.313 | | | 142 | 4.245 | 143 | 4.282 | | | 140 | 4 200 |
| Wise, | 206 | 8 663 | 189 | 4,914 | 297 | 9,801 | 200 | 8,042 | 187 | 4,875 | 287 | 9,471 | 214 | 8,946 | 183 | 4,684 | 292 | 9,636 |

## TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

| NAME OF COLLIERY. | APRIL. | | | | | | MAY. | | | | | | JUNE. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Beaver, | 550 | 19,662 | 221 | 26.975 | 869 | 26 777 | 550 | 19,663 | 201 | 24,725 | 975 | 30,030 | | | | | | |
| Cascade, | 205 | 8,610 | 315 | 7,560 | 205 | 8,200 | | . . . | | | . | | 280 | 11,760 | 408 | 9.780 | 366 | 13 185 |
| Clermont, | 115 | 3,795 | 105 | 1.890 | 325 | 6 256 | 118 | 3,877 | 110 | 1,980 | 325 | 6,256 | 110 | 3,630 | 100 | 2.100 | 263 | 4,153 |
| Clinton, | 162 | 11,655 | 160 | 9,600 | 450 | 13,500 | 152 | 10,935 | 136 | 8,175 | 465 | 13,950 | 140 | 8,400 | 123 | 7,350 | 338 | 11 625 |
| Coalport, | | | . . . | | | | | | | | . | | 235 | 8.475 | | | 424 | 8,475 |
| Colorado, | 253 | 11,362 | 247 | 13,571 | 223 | 12.237 | 250 | 11,277 | 243 | 12,251 | 223 | 12.238 | 255 | 11,464 | 245 | 13 447 | 224 | 12,333 |
| Dagus, No. 1, | 253 | 10,575 | 168 | 7,912 | 410 | 14,760 | 350 | 10,500 | 271 | 7.138 | 425 | 15 300 | 374 | 11,213 | 159 | 4.763 | 271 | 8.138 |
| Dagus, No. 4, | 168 | 5,025 | 264 | 7,912 | 410 | 14,760 | 158 | 4,725 | 271 | 7,133 | 425 | 15.300 | 240 | 7,200 | 240 | 7,200 | 276 | 8,288 |
| Dagus, No. 5, | 274 | 8,213 | 215 | 4 515 | 306 | 9 188 | 386 | 11,588 | 215 | 4,515 | 296 | 8 888 | 216 | 4.541 | 226 | 5,751 | 290 | 8,700 |
| Dagus, No. 6, | 236 | 7,087 | 168 | 3 518 | 419 | 8 793 | 315 | 9.459 | 180 | 3,780 | 388 | 8.137 | 400 | 14 400 | 284 | 8,513 | 400 | 14,400 |
| Davidson, | 121 | 6 398 | 65 | 2,275 | 174 | 6,255 | 122 | 6.481 | 65 | 2 275 | 183 | 6.561 | | | | | | |
| Decatur, | 98 | 3,510 | 183 | 5,840 | 185 | 7,400 | 115 | 5 364 | 114 | 4.090 | 130 | 5 200 | 160 | 5,760 | 106 | 3,400 | 104 | 4 150 |
| Edenburg, | . . . | | | . . | | | 98 | 3,540 | 92 | 3,666 | 177 | 3,982 | | | | | | |
| Eureka, No. 2, (Clearfield,) | 335 | 14.070 | 258 | 11.400 | 405 | 18 225 | | | | | | | | | | | | |
| Excelsior, | 330 | 23 100 | 238 | 10 175 | 590 | 21.240 | 295 | 15 930 | 213 | 13.600 | 545 | 22.890 | 200 | 14,000 | 190 | 9,120 | 500 | 18,000 |
| Glenwood, | 194 | 6 781 | 130 | 3 380 | 335 | 20.100 | 178 | 5.325 | 130 | 3.380 | 335 | 20.100 | | | | | | |
| Goss Run, | 148 | 13 867 | 150 | 6.375 | 384 | 13,813 | 74 | 7 107 | 140 | 5,950 | 381 | 13.815 | | | | | | |
| Hamilton, | 150 | 14 400 | 193 | 15 400 | 186 | 14 475 | 146 | 14,040 | 200 | 14,000 | 186 | 14.505 | 140 | 13 445 | | | 170 | 13 275 |
| Hardscrabble, | 97 | 5.075 | 53 | 5,040 | 92 | 3 675 | 96 | 5,654 | 53 | 5,040 | 94 | 3,775 | 98 | 5,779 | 50 | 4,800 | 96 | 3 825 |
| Harrison, | 113 | 4,275 | 73 | 2 683 | 195 | 4.095 | 155 | 7,410 | 73 | 2,682 | 195 | 4 095 | 113 | 4,275 | 73 | 2,683 | 195 | 4.095 |
| Hickory, | 302 | 6,040 | 100 | 3,000 | 200 | 6,050 | 200 | 4,950 | 200 | 4,000 | 210 | 5,040 | 200 | 4.950 | | | 200 | 5 000 |
| Hilldrup, | | | | | | | . . | . . . . | . . . | . | . . . | | 245 | 11,760 | 218 | 10,440 | 270 | 12,960 |
| Hillville, | 164 | 7.369 | 158 | 6,615 | 159 | 6,667 | | | | | | | | | | | | |
| Instanter, No. 1, | 110 | 4.235 | 110 | 2 311 | 260 | 7 020 | 108 | 4.139 | 113 | 2 362 | 248 | 6,683 | 108 | 4,139 | 105 | 2,205 | 250 | 6.750 |
| Instanter, No. 2, | 225 | 7,425 | 225 | 7,425 | 225 | 7,875 | 225 | 7,425 | 280 | 5,880 | 247 | 8,662 | 235 | 9 047 | 265 | 5.565 | 250 | 8 750 |
| Lackawannock, | 186 | 9.281 | 172 | 8 504 | 181 | 8.575 | | | | | | | 200 | 11.000 | 195 | 9.500 | 184 | 10,293 |
| Lancashire, | 147 | 5,675 | 88 | 3 500 | 147 | 5 675 | 156 | 6 000 | 114 | 4,000 | 395 | 8,000 | 200 | 7 000 | 114 | 4.000 | 416 | 8.000 |
| Laurel Run, | 234 | 7,947 | 65 | 2,340 | 195 | 7,800 | 281 | 9,562 | 95 | 3.420 | 228 | 9 100 | 284 | 9,448 | 85 | 3,060 | 231 | 9,250 |
| Lower Hillville, | . . . | . . . . . | . . . . | . . . . | . . | . . . | 166 | 7.481 | 166 | 6,982 | 173 | 7,224 | | | | | | |
| Maple Grove, | . . . | . . . . | . . . . | . . . . | . . . | . . . . . | 156 | 5,685 | 86 | 5,138 | 262 | 10,860 | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mapleton, | 82 | 5,910 | 110 | 3,960 | 163 | 7,800 | 121 | 8,736 | 115 | 4,140 | 168 | 8,040 | 91 | 6,525 | 100 | 3 600 | 168 | 8,040 |
| Moshannon, (West,) | . | | . | . | - | . | . . . | | . | | . | . | 383 | 18,360 | 103 | 5,535 | 395 | 21,330 |
| New Catfish, | 179 | 7.507 | 173 | 7.245 | 195 | 7,020 | 183 | 8.212 | 186 | 7,822 | 199 | 7.155 | | | | | | |
| Ormsby, | 1,800 | 25 200 | 300 | 4,800 | 173 | 18.000 | 1,300 | 18 200 | 300 | 4.800 | 173 | 18 000 | 1,300 | 15 600 | 300 | 4 800 | 250 | 10.000 |
| Pancoast, | 130 | 5,460 | 110 | 4 950 | 138 | 5,775 | 129 | 5,472 | 110 | 4 950 | 128 | 5.355 | 138 | 5 775 | 120 | 5,400 | 140 | 5 880 |
| Pardoe, | . . . | | . | | . | | 677 | 27.060 | 180 | 27 040 | 752 | 27.054 | 671 | 26,840 | 179 | 5,370 | 743 | 26,748 |
| Pine Run, | 179 | 7.507 | 90 | 3.780 | 158 | 5.512 | 178 | 7,455 | 85 | 3 570 | 153 | 5.337 | | | | | | |
| Rankin, | 310 | 13.950 | 299 | 8 957 | 328 | 12 460 | 301 | 13 545 | 293 | 8.798 | 322 | 12 250 | 284 | 12 769 | 278 | 8 344 | 306 | 11 776 |
| Red Bank, No. 1, | 119 | 8,124 | 104 | 4,868 | 116 | 7,087 | 117 | 7,922 | 137 | 6.442 | 113 | 6,863 | 108 | 7.333 | 99 | 4,689 | 110 | 6 740 |
| Red Bank, No. 2, | 100 | 2,000 | | | 100 | 2 000 | 75 | 2.000 | 50 | 1,500 | 100 | 2,500 | 25 | 3.375 | . . | . | 100 | 3,250 |
| Soldier Run, | 156 | 13.105 | 133 | 11,740 | 370 | 12 950 | 172 | 13,244 | 120 | 16,334 | 375 | 13,125 | 165 | 13,885 | 130 | 10,000 | 378 | 13,212 |
| Sterling, No. 1, | 128 | 18 263 | 148 | 14 800 | 282 | 30,210 | 262 | 26 150 | 164 | 14,737 | 219 | 27,350 | | | | | | |
| Sterling, No. 2. | 162 | 14 123 | 89 | 8,435 | 176 | 14 987 | 167 | 14.715 | 158 | 12,285 | 188 | 22 875 | | | | | | |
| Stoneboro', No. 2, | 162 | 11.670 | 178 | 16 020 | 594 | 17,812 | 198 | 14,240 | 185 | 16 687 | 580 | 17.400 | 183 | 12.067 | 183 | 16.430 | 584 | 17,520 |
| Stoneboro', No. 3, | 135 | 5 670 | 249 | 8.455 | 239 | 5.277 | 134 | 5,633 | 181 | 7 225 | 230 | 5,750 | 143 | 5.985 | 186 | 7,435 | 233 | 5 831 |
| St. Mary's, | 206 | 11 097 | 204 | 9 796 | 205 | 10,920 | 205 | 11.083 | 205 | 9 828 | 204 | 11,016 | 208 | 11.232 | 207 | 9.948 | 206 | 11,138 |
| Washington, | 121 | 5 092 | 94 | 4,219 | 125 | 5 250 | 129 | 5,308 | 108 | 4,837 | 129 | 5.408 | 130 | 5.460 | 114 | 2 275 | 135 | 5,670 |
| Welsh, | 138 | 4 148 | . | | 136 | 4,080 | . . | . | . . | . . . | | | 150 | 4.500 | 137 | 4,103 | | |
| Wise, | 207 | 8,704 | 183 | 4,745 | 294 | 9,694 | 213 | 8 956 | . . | . . . | 289 | 9,529 | 188 | 7,896 | | | | |

## TABLE IV.—VENTILATION OF COLLIERIES.—*Continued.*

| NAME OF COLLIERY. | JULY. | | | | | | AUGUST. | | | | | | SEPTEMBER. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Bethel, | . . . | . . . | . . | . . . . | . . | . . . . | . | . . . . | . . | . . . | . . . | . . . | | | | | 275 | 4.400 |
| Cameron, | . | . | . | . | . | . . | . | | . | . | | | 195 | 7,000 | 200 | 6,950 | 200 | 7,225 |
| Cascade, | 291 | 12 232 | 410 | 9.480 | 400 | 12,000 | 228 | 9,555 | 345 | 8,280 | 305 | 9,150 | | | | | | |
| Chestnut Ridge, | 150 | 8.400 | 98 | 6,825 | 200 | 8.000 | | | | | | | | | | | | |
| Clermont, | 113 | 3,712 | 108 | 1,935 | 317 | 6,018 | 112 | 3,712 | 108 | 1,921 | 300 | 5,775 | 118 | 3 937 | 108 | 1.935 | 325 | 4.672 |
| Clinton, | . . | . . . . | . . | . . . . | . . | . | . | | . . | . | . | | 160 | 11,520 | 145 | 8,700 | 390 | 11,700 |
| Coalport, | . . . | . . . . . | . . | . . . | . | | 139 | 5,000 | . | . . . . | 250 | 5,000 | | | | | | |
| Cody Ridge, | . . | | . | . | 334 | 9 025 | | | | | | | | | | | | |
| Colorado, | 246 | 11 059 | 241 | 13 269 | 211 | 11.708 | 252 | 11 340 | 245 | 13.450 | 222 | 12.210 | | . | | | | |
| Dagus, No. 1, | 361 | 10.837 | 290 | 8.700 | 386 | 14.505 | 353 | 10 575 | 268 | 8.025 | 351 | 12 645 | 378 | 11,325 | 216 | 6,487 | 344 | 12,375 |
| Dagus, No. 4, | 168 | 5 025 | 290 | 8 700 | 386 | 14.505 | 265 | 7,950 | 209 | 6 262 | 274 | 8 212 | | | | | | |
| Dagus, No. 5, | 253 | 7.575 | 224 | 4,699 | 290 | 8,700 | 249 | 7,462 | 194 | 5 812 | 394 | 8 269 | 284 | 8,512 | 179 | 5,362 | 298 | 8,925 |
| Dagus, No. 6, | 268 | 8,025 | 221 | 4 646 | 280 | 8,400 | 259 | 7,762 | 189 | 5,662 | 273 | 8 175 | | | | | | |
| Dagus, No. 7, | . . . | . . | . | . . | . . . | . . | . . . | . . . | . | . . . | . | . . | 286 | 8 587 | 175 | 5.250 | 299 | 8,962 |
| Dagus, No. 9, | . | . | . | . . | | | . . | . | . | . | . | | 285 | 8,550 | 168 | 5.025 | 296 | 8 888 |
| Decatur, | 93 | 3 320 | 180 | 5,760 | 161 | 6,450 | 68 | 3,430 | 126 | 4 032 | 126 | 5,040 | 117 | 4 230 | 155 | 4,960 | 164 | 6,550 |
| Derby, | 100 | 2.500 | | | | | | | | | | | | | | | | |
| Empire, | 311 | 13 072 | 294 | 11,750 | 623 | 12,450 | 264 | 11 077 | 260 | 10,400 | 436 | 10 906 | 285 | 11,970 | 279 | 11,150 | 539 | 10,775 |
| Eureka, (Elk,) | | | | | | | | | | | | | 233 | 11 160 | 168 | 4,522 | 320 | 15 680 |
| Excelsior, | 300 | 21.000 | 200 | 8.400 | 550 | 18 800 | 193 | 10.395 | 183 | 11,680 | 543 | 19 530 | 190 | 10.260 | 183 | 11,733 | 543 | 19.548 |
| Fairmount, No. 2, | 311 | 15,251 | 229 | 11,221 | 516 | 18,558 | 311 | 15 251 | 229 | 11,221 | 516 | 18 558 | 311 | 15,241 | 229 | 11,221 | 515 | 18 558 |
| Falls Creek, | . . | . . . | . . | . . . . . | . . | . | 100 | 2 000 | . . . | . . . | 100 | 200 | | | | | | |
| Franklin, | . | . | | . | . | | 292 | 28.349 | . . . | . | 545 | 32.700 | 291 | 28 304 | . | . . | 545 | 32 700 |
| Glenwood, | 194 | 6,781 | 130 | 3 380 | 335 | 20 100 | 194 | 6.781 | 131 | 3.405 | 335 | 15 410 | 194 | 6,781 | 130 | 3.380 | 335 | 20.100 |
| Goss Run, | 96 | 5 390 | 152 | 7 244 | 396 | 14 265 | 122 | 6.857 | 190 | 7,961 | 181 | 13 725 | 83 | 4 510 | 148 | 7,544 | 281 | 13 725 |
| Hamilton, | 154 | 10 350 | 135 | 10.800 | 383 | 11 475 | 171 | 11 265 | 128 | 10.200 | 330 | 9,900 | 156 | 13,100 | . . | . . . . . | 343 | 10,275 |
| Hardscrabble, | 95 | 5 605 | 53 | 5.040 | 91 | 3.650 | 105 | 5,580 | 48 | 4 620 | 94 | 3 800 | | | | | | |
| Harrison, | 113 | 4 275 | 73 | 2.682 | 195 | 4 095 | 180 | 4 085 | 73 | 2,682 | 195 | 4 095 | 113 | 4.275 | 72 | 2,682 | 195 | 4.095 |
| Hickory, | 200 | 4,490 | 150 | 4,000 | 200 | 5.000 | 200 | 4 950 | . | | 208 | 5 000 | 200 | 4,950 | . . . | . . . . . | 200 | 5,000 |
| Hildrup, | 269 | 12,900 | 216 | 10,380 | 260 | 12,480 | 283 | 13,120 | 215 | 10,320 | 265 | 13,720 | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hillville, | . | . | . | . | . | . . . . | . . | . . | . | . . . | . . | . . | 171 | 7.706 | 417 | 7,535 | 173 | 7 245 |
| Instanter, No. 1, | 108 | 4 139 | 113 | 2,362 | 250 | 8.125 | 105 | 4.042 | 250 | 8.125 | 255 | 6 885 | 108 | 4 139 | 110 | 2.310 | 260 | 7.020 |
| Instanter, No. 2, | 213 | 6 906 | 225 | 5.025 | 238 | 8 302 | 250 | 8 125 | 232 | 4.882 | 245 | 8 575 | 205 | 6.150 | 223 | 4 672 | 218 | 7 613 |
| Lackawannock, | 202 | 10 122 | 192 | 9 610 | 179 | 9.830 | 193 | 9 625 | 178 | 8 960 | 169 | 9,312 | 196 | 9.786 | 189 | 9 437 | 170 | 9 346 |
| Lancashire, | 171 | 6 000 | 114 | 4 000 | 400 | 8.000 | 169 | 6 500 | 114 | 4.000 | 404 | 10 000 | 208 | 8.000 | 150 | 6 000 | 494 | 10,000 |
| Laurel Run, | 275 | 9 350 | 219 | 7.875 | 219 | 8.750 | 250 | 8 500 | 219 | 7 875 | 219 | 8 750 | 243 | 8,245 | 85 | 3,060 | 206 | 8,250 |
| Lower Hillville, | 195 | 8,775 | 186 | 7,822 | 185 | 7,770 | 194 | 8 719 | 194 | 8 138 | 195 | 8,190 | | | | | | |
| Maple Grove, | | | | | . . . | . | 209 | 6,270 | 88 | 2 647 | 381 | 11,415 | | | | | | |
| Mapleton, | 96 | 8.317 | 90 | 4 320 | 175 | 8 400 | 126 | 9,044 | 83 | 2 970 | 170 | 8 160 | 80 | 5,760 | 90 | 3 240 | 173 | 8.280 |
| Moshannon, | 314 | 15,060 | 176 | 9 519 | 390 | 21,060 | . | | | . | | | 191 | 10 710 | 171 | 7,706 | 206 | 9,075 |
| Mount Hope, | | | | | . . | | 292 | 12.275 | 308 | 11 875 | 388 | 11.650 | | | | | | |
| New Catfish, | 196 | 8 242 | 189 | 7.927 | 216 | 7.785 | 190 | 8 550 | 208 | 8 715 | 210 | 7 560 | 189 | 8 494 | 184 | 7.718 | 201 | 7 245 |
| Ormsby, | 1,215 | 17.010 | 233 | 7 000 | 300 | 16.500 | 914 | 12.800 | 50 | 7 000 | 233 | 12 800 | 1 300 | 18 200 | 300 | 4 800 | 173 | 18.000 |
| Pancoast, | 138 | 5 775 | 111 | 5 006 | 138 | 5 775 | 131 | 5 513 | 111 | 5,005 | 131 | 5,513 | 130 | 5 460 | 108 | 4 837 | 130 | 5 590 |
| Pardoe, | 678 | 27 100 | 181 | 27,115 | 753 | 27,108 | . | | . | | | | 679 | 27.160 | 181 | 4 430 | 780 | 28.062 |
| Pine Run, | | | . | | | | 180 | 7,560 | 90 | 3,780 | 160 | 5.600 | 190 | 7 980 | 95 | 3.990 | 158 | 5 512 |
| Rankin, | 275 | 12.375 | 269 | 8,080 | 302 | 11 466 | 276 | 12,431 | 271 | 8 168 | 301 | 11,593 | 280 | 12.600 | 274 | 8.820 | 302 | 11.634 |
| Red Bank, No. 1, | 103 | 7.024 | 99 | 4 640 | 102 | 6 229 | 105 | 7.140 | 98 | 4,592 | 107 | 6.454 | 100 | 6,812 | 101 | 4,732 | 111 | 6 778 |
| Red Bank, No. 2, | 81 | 972 | . . | . . | 57 | 1,836 | 62 | 747 | . . | . . | 46 | 1,395 | 76 | 915 | . | | 48 | 1 568 |
| Rochester, | . . | | . . | . . . | . | . . | . | . | | | | | 800 | 38 400 | 250 | 11 000 | 1 200 | 57,600 |
| Sprague, | 120 | 16 334 | . . . | | 168 | 7,035 | 180 | 6 300 | 375 | 12 125 | 121 | 11 640 | 180 | 6.300 | 242 | 18.125 | 194 | 15 150 |
| Soldier Run, | 171 | 13.188 | 143 | 6 982 | 324 | 13,608 | 141 | 6 921 | 118 | 11 334 | 147 | 13 350 | 141 | 6.921 | 115 | 11 079 | 140 | 13 584 |
| Sterling, No. 1, | 194 | 33 060 | 189 | 18 710 | 214 | 37.200 | 161 | 31.345 | 212 | 21 200 | 271 | 33 090 | 203 | 39.660 | 140 | 14 100 | 329 | 40 130 |
| Sterling, No 2, | 210 | 7 560 | 200 | 8 000 | 200 | 8.400 | 235 | 19 310 | 248 | 19 800 | 247 | 21.000 | 176 | 16.048 | 167 | 13 300 | 212 | 17.915 |
| Stoneboro', No 2, | 164 | 12,282 | 124 | 12 433 | 581 | 17 437 | 124 | 12 131 | 138 | 14.904 | 588 | 17.625 | 135 | 12 317 | 249 | 16 212 | 563 | 16.875 |
| Stoneboro', No. 3, | 129 | 5 239 | 177 | 7 065 | 230 | 5.738 | 135 | 4.660 | 184 | 7,369 | 231 | 5.769 | 136 | 5.712 | 181 | 7.225 | 230 | 5.750 |
| St. Mary's. | 208 | 11 232 | 206 | 9 900 | 206 | 11.138 | 315 | 11,034 | 320 | 9 593 | 321 | 11.135 | 303 | 14 544 | 302 | 12.663 | 301 | 14.460 |
| Washington, | 121 | 5 092 | 110 | 4,950 | 119 | 4 988 | 126 | 5,303 | 105 | 4,725 | 126 | 5 303 | 126 | 5,302 | 106 | 4,781 | 122 | 5 145 |
| Welsh, | 136 | 4,072 | . . | | 133 | 3,998 | 137 | 4,110 | . . | . | 134 | 4 020 | | | | | | |
| West Moshannon, | . . . | . . . | . . . | . . . | . | . | . | . . | . . | . | . . | . . . . | 328 | 15,720 | 133 | 7,415 | 340 | 18,360 |

## TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

| NAME OF COLLIERY. | OCTOBER. | | | | | | NOVEMBER. | | | | | | DECEMBER. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Beaver, | 248 | 17,885 | 151 | 23,396 | 613 | 17,150 | | | | | | | | | | | | |
| Bethel, No. 4, | . | | | | | | ... | .... | ... | .... | 400 | 6,000 | | | | | | |
| Cameron, | 200 | 8,500 | 150 | 8,200 | 300 | 8,250 | 200 | 9,650 | 150 | 9,275 | 250 | 9,375 | 133 | 5,565 | 136 | 4.087 | 135 | 5,670 |
| Cascade, | ... | . | ... | | | | | . | . | | . | .. | 305 | 12,810 | 510 | 12,240 | 355 | 12,780 |
| Chestnut Ridge, | 196 | 9.520 | 137 | 6.819 | 298 | 8,925 | 191 | 9,180 | 59 | 2 387 | 263 | 7.875 | | | | | | |
| Clermont, | 120 | 3,960 | 118 | 2.115 | 325 | 6.256 | 118 | 3,877 | 118 | 2,115 | 350 | 6,738 | 115 | 3.795 | 105 | 1 890 | 275 | 5,019 |
| Clinton, | 176 | 12,662 | 121 | 7,275 | 413 | 12 375 | ... | | .. | .... | ... | .. | 151 | 10,890 | 135 | 8,125 | 430 | 12,900 |
| Cody Ridge, | | | | | 305 | 9,175 | | | | | | | | | | | | |
| Colorado, | 252 | 11.340 | 244 | 13,406 | 217 | 11 946 | 254 | 11,441 | 247 | 13,558 | 225 | 12,347 | 244 | 10.980 | 236 | 12,980 | 236 | 11 962 |
| Columbia, | 350 | 14,000 | 292 | 12,625 | 717 | 15,333 | 350 | 14.000 | 300 | 15,500 | 750 | 15 000 | 269 | 10 750 | 300 | 13,500 | 750 | 15.000 |
| Cranberry, | 167 | 5,000 | | . | 133 | 4.000 | 300 | 6,000 | 98 | 2 000 | 150 | 4 500 | 300 | 6 000 | . | | 400 | 4,800 |
| Dagus, No. 1, | 389 | 11 662 | 266 | 7,987 | 360 | 12,960 | 410 | 12 300 | 310 | 9 300 | 395 | 14 220 | 396 | 11,887 | 294 | 8 813 | 408 | 14 670 |
| Dagus, No. 5, | 296 | 8 887 | 219 | 6.562 | 315 | 1.245 | 318 | 9,550 | 245 | 7.350 | 355 | 10,650 | 341 | 10,238 | 245 | 7.350 | 384 | 11,513 |
| Dagus, No. 7, | 291 | 8 737 | 246 | 7,387 | 315 | 9,450 | 280 | 8,400 | 160 | 4,800 | 310 | 9.300 | 344 | 10,312 | 201 | 6,038 | 374 | 11,213 |
| Dagus, No. 9, | 305 | 9,150 | 241 | 7.237 | 349 | 10,462 | 282 | 8,450 | | .. | 300 | 9,000 | 340 | 10,200 | 241 | 6,413 | 376 | 11,288 |
| Davidson, | . | | | | | | | | | | | . | 185 | 6,660 | 90 | 3.150 | 180 | 6,480 |
| Decatur, | 133 | 4,770 | 176 | 5,640 | 170 | 7,050 | 125 | 4,500 | 168 | 5.360 | 168 | 6 700 | 178 | 6.390 | 174 | 5,560 | 174 | 6,950 |
| Empire, | 289 | 12,127 | 284 | 11,350 | 608 | 12 150 | 318 | 13,335 | 294 | 11,750 | 660 | 13 325 | 288 | 12,078 | 280 | 11,200 | 611 | 12.225 |
| Eureka, No. 2, (Clearfield,) | | | | | | | | .. | . | | .. | | 376 | 15 802 | 248 | 11,137 | 403 | 18,112 |
| Eureka, (Elk,) | 208 | 9,960 | 135 | 3,645 | 135 | 6.615 | | | | | ... | | 205 | 9 840 | 143 | 4.275 | 207 | 10,167 |
| Excelsior, | 278 | 9,990 | 188 | 9.000 | 623 | 22,410 | 278 | 9.990 | 189 | 9 000 | 624 | 22,455 | 278 | 9.990 | 188 | 9,000 | 622 | 22,410 |
| Fairmount, No. 2, | 314 | 15 398 | 156 | 7 656 | 686 | 24 696 | 244 | 11 956 | 182 | 8 893 | 306 | 11 025 | 284 | 13,904 | 204 | 9,984 | 261 | 9,405 |
| Franklin, | 293 | 28.381 | | | 490 | 29 400 | 298 | 28 304 | . . | | 545 | 32,700 | ... | | . | | | |
| Glenwood, | 194 | 6,781 | 130 | 3.380 | 335 | 20.100 | 194 | 6,781 | 130 | 3.570 | 335 | 20.100 | 194 | 6,781 | 130 | 4,680 | 335 | 20 100 |
| Goss Run, | 78 | 4 340 | 143 | 6.056 | 379 | 13,635 | 91 | 5 110 | 144 | 6,089 | 388 | 13 950 | 93 | 5 280 | 144 | 6,038 | 339 | 13 995 |
| Hamilton, | .. | | | | | | 140 | 11,200 | 110 | 4,400 | 353 | 10,575 | 145 | 11,600 | .. | ... | 385 | 11,550 |
| Hardscrabble, | 99 | 5 852 | 57 | 5 460 | 99 | 3,975 | 105 | 6 172 | 56 | 5,400 | 101 | 4,050 | | | | | | |
| Harrison, | 113 | 4,275 | 73 | 2,682 | 195 | 4,095 | 108 | 4,085 | 73 | 2,682 | 195 | 4 095 | | | | | | |
| Hazzard's, | ... | | ... | .... | | | . | ... | ... | .... | ... | . | 90 | 4,320 | 100 | 3,000 | 150 | 3.000 |
| Hickory, | 200 | 4,950 | ... | .... | 250 | 5,000 | 200 | 4,950 | ... | .... | 200 | 5,000 | .. | .... | ... | .... | 300 | 5,000 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hildrup, | 303 | 14,544 | 189 | 9.048 | 314 | 15,084 | 329 | 15.780 | 193 | 9.240 | 365 | 17,532 | 240 | 15,084 | 181 | 8,664 | 344 | 16.512 |
| Hillville, | 159 | 7,441 | 155 | 6,500 | 158 | 6,646 | 175 | 7,875 | 168 | 6 966 | 175 | 7 350 | 169 | 7,594 | 171 | 7 161 | 173 | 7,277 |
| Instanter, No. 1, | 113 | 4,331 | . | . | 255 | 6.885 | 118 | 4 524 | 118 | 2.467 | 255 | 6 885 | 115 | 4 427 | 112 | 2.362 | 250 | 6.750 |
| Instenter, No. 2, | 205 | 6 150 | 113 | 2,468 | 223 | 7.787 | 210 | 6.300 | 210 | 4.410 | 250 | 8 750 | 215 | 6,450 | 205 | 4,305 | 238 | 8.313 |
| Lackawannock, | 160 | 8,019 | 154 | 7,719 | 141 | 7.940 | 176 | 8.806 | 154 | 7 719 | 144 | 7 940 | | | | | | |
| Lancashire, | 182 | 7 000 | 114 | 4,000 | 444 | 9 000 | 211 | 8.000 | 143 | 5.000 | 550 | 11,000 | 229 | 8.000 | 100 | 4.000 | 475 | 10,060 |
| Laurel Run, | 190 | 6,460 | 95 | 3,420 | 150 | 6,000 | 283 | 9.605 | 95 | 3.420 | 215 | 8 600 | 220 | 7,480 | 85 | 3,060 | 150 | 6.000 |
| Maple Grove, | | | | | | | 201 | 6,015 | 175 | 5 250 | 409 | 12,262 | | | | | | |
| Mapleton, | 73 | 5,240 | 93 | 3,330 | 175 | 8,400 | 111 | 7,970 | 87 | 6.450 | 168 | 8,040 | 84 | 6.048 | 90 | 3,180 | 173 | 8 280 |
| Moshannon, | . . | . | . . . | . | . . | . | . | . | . | | . | | 219 | 12 500 | 203 | 9,112 | 238 | 10 450 |
| Neshannock, | 43 | 3,060 | 195 | 2,340 | 89 | 2 662 | 66 | 4,734 | 323 | 3,870 | 141 | 4.230 | 67 | 4.788 | 321 | 3 852 | 144 | 4.327 |
| New Catfish, | 166 | 7,481 | 167 | 7,014 | 180 | 6,362 | 182 | 8 201 | 179 | 7.507 | 183 | 7 697 | 186 | 8 359 | 185 | 7,739 | 188 | 7,885 |
| New Virginia, | . . | . . | 88 | 3,500 | 292 | 10,500 | 200 | 7,000 | 150 | 3 000 | 450 | 10,050 | | | | | | |
| Ormsby, | 1,300 | 18,200 | 300 | 4,800 | 400 | 22 000 | | | | | | | 250 | 18,000 | 100 | 1,600 | 1,200 | 19,200 |
| Pancoast, | 128 | 5,355 | 108 | 5,805 | 125 | 5,250 | 145 | 6,090 | 120 | 5,400 | 145 | 6.090 | | | | | | |
| Pardoe, | . | . | . | . | . | . | 678 | 27,130 | 181 | 5.430 | 753 | 27,126 | 663 | 26.530 | 177 | 26 600 | 737 | 26,514 |
| Pine Run, | 198 | 8.295 | 100 | 4,200 | 178 | 6 212 | 195 | 8,190 | 100 | 4.200 | 168 | 5,863 | 190 | 7 980 | 90 | 3,780 | 180 | 6,300 |
| Rankin, | 277 | 12,454 | 270 | 8.112 | 315 | 11,479 | 283 | 12,712 | 277 | 8 308 | 309 | 11,718 | 292 | 13.127 | 286 | 8,574 | 284 | 11 910 |
| Red Bank, No. 1, | 93 | 6 510 | 105 | 4,957 | 103 | 6,278 | 102 | 6,936 | 101 | 4,748 | 101 | 6,188 | 116 | 7.874 | 76 | 3,572 | 234 | 7,247 |
| Red Bank, No. 2, | 86 | 1,035 | . . . | . . | 64 | 2,080 | 79 | 942 | . . | . . . | 46 | 1.518 | | | | | | |
| Sharon Shaft, | . . . | . . . | . . | . . . | . . . | . . . | . . | . | . . | . . | 150 | 3.000 | | | | | | |
| Sligo Branch, | . . | . . | . . | . . . | . . . | . . . | 192 | 6.930 | 57 | 1,725 | 313 | 7,500 | 201 | 7.245 | 210 | 3.780 | 351 | 8.430 |
| Soldier Run, | 130 | 11.000 | 375 | 13.625 | 141 | 13,625 | 158 | 13 370 | 119 | 16.275 | 380 | 13 300 | 158 | 13 238 | 143 | 6.840 | 383 | 13,237 |
| Sprague. | 143 | 6.982 | 150 | 7 260 | 120 | 6 000 | 155 | 7,595 | 140 | 13 440 | 163 | 7,800 | 153 | 7,472 | 150 | 7.200 | 283 | 8 475 |
| St. Mary's, | 301 | 14.448 | 302 | 12.684 | 301 | 14 448 | . | . . | . . | | . . | . | 303 | 14,554 | 302 | 12 684 | 302 | 14 576 |
| Sterling, No. 1, | 196 | 33 470 | 151 | 14.988 | 247 | 36 238 | 261 | 46,905 | 227 | 21.780 | 249 | 51.100 | 285 | 46.486 | 186 | 20 130 | 221 | 49.086 |
| Sterling, No. 2, | 167 | 27,490 | 187 | 16.750 | 238 | 28 500 | 247 | 20.714 | 138 | 16.500 | 269 | 22,825 | 265 | 22.530 | 156 | 13.908 | 291 | 24.762 |
| Stoneboro', No. 2. | 178 | 15,442 | 191 | 15 822 | 604 | 18.112 | 152 | 13.840 | 168 | 12,240 | 579 | 17,362 | 143 | 11,715 | 154 | 12,772 | 589 | 17.662 |
| Stoneboro', No. 3, | 138 | 5.775 | 181 | 7.225 | 230 | 5.750 | 128 | 5.355 | 179 | 7,175 | 230 | 5,750 | 134 | 5,681 | 181 | 7,225 | 228 | 5 697 |
| Washington, | 130 | 5 460 | 109 | 4,890 | 129 | 5 407 | 140 | 5,880 | 118 | 5,287 | 140 | 5,890 | | | | | | |
| Wheeler, | 206 | 4,125 | 103 | 3,600 | 118 | 4,125 | | | | | | | | | | | | |
| Wise, No. 2, | 25 | 2,200 | . . . | . . . . | 93 | 2,611 | . . . | . . . . | . . . | . . . . | 87 | 2,429 | . . | . . . . | . . . | . . . . | 88 | 2,464 |

## LIST OF ACCIDENTS *occurring in the Mines of the Third Bituminous Coal District of Pennsylvania, for the year ended Dec. 31, 1882.*

| Date of accident. | NAME OF PERSON INJURED. | Age. | Married or single. | Number of orphans. | Name of Colliery. | Location—County. | Date of investigation. | Nature and Cause of Accident. |
|---|---|---|---|---|---|---|---|---|
| Jan. 9 | Joseph Morris, | 30 | Married, | | | | | Head bruised by fall of roof. |
| 9 | Frank Dickson, | 22 | Single, | | | | | Arm broken while driving mule inside. |
| 10 | Thomas Jack, | 30 | Married, | 2 | | | Jan. 10 | Killed by fall of coal. |
| 10 | David Lewis, | 13 | | | | | | Bruised by mine wagons. |
| 14 | George Keller, | 12 | | | | | | Killed between two empty mine wagons. |
| 19 | Joseph Dingle, | 50 | Married, | | | | Jan. 14 | Crushed badly by fall of roof. |
| 21 | John McKenna, | 25 | Single, | | | | | Foot and hand crushed by fall of coal. |
| Feb. 6 | William Beveridge, | 18 | Single, | | | | | Kicked in the face by a mule. |
| 25 | Joseph Renwick, | 18 | Single, | | | | | Limb broken by a fall of slate. |
| Mar. 8 | John Bishop, | 72 | Married, | | | | Mar. 9 | Killed by a fall of coal. |
| 9 | Alexander Dressel, | 32 | Married, | | | | | Injured by a fall of coal. |
| 9 | John Powell, | 11 | | | | | | Injured by empty wagon. |
| 10 | Martin Costello, | 11 | | | | | | Lost leg by mine wagons. |
| 20 | Hugh Baxter, | 27 | Single, | | | | | Foot injured by a fall of coal. |
| 24 | Anthony Yates, | 20 | Single, | | | | | Injured by a fall of slate. |
| 29 | August Rodka, | 25 | Single, | | | | | Injured by a fall of slate. |
| 29 | George Swigard, | 30 | Single, | | | | | Injured by a fall of slate. |
| 29 | James Bond, | 19 | Single, | | | | | Hand injured by a fall of slate. |
| April 6 | Alfred Wiggett, | | | | | | | Injured by a fall of coal. |
| 8 | Henry Swires, | 28 | Married, | | | | | Hand crushed while coupling mine cars. |
| 11 | Edward Kirtley, | 11 | | | | | | Killed by being run over by mine cars inside. |
| 11 | A. Baldwin, | 21 | Single, | | | | | Foot Injured. |
| 11 | John Chaterwood, | 20 | Single, | | | | | Lost an eye, caused by a small stone driven from the mule's foot while hauling in the mine. |
| 15 | August Gustha, | 30 | Married, | | | | | Leg broken. |
| 26 | John Hutchinson, | 42 | Married, | 3 | | | April 28 | Killed by a mass of rock falling in his room. |
| 31 | Robert Collins, | 35 | Married, | | | | | Leg broken by a fall of coal. |
| May 4 | Oscar Risher, | 14 | | | | | May 4 | Killed on incline plane by mine cars. |
| 4 | Ed. Risher, | 12 | | | | | | Injured by mine cars on incline plane. |
| 5 | Moses Smith, | 55 | Married, | | | | | Foot injured by a fall of coal. |
| 29 | S. P. Bowen, | 38 | Married, | | | | | Foot injured by slate falling from roof. |
| 31 | Charles George, | 21 | Single, | | | | | Injured by a pick point going into the eye while cutting top coal. |
| 31 | William Berndt, | 51 | Married, | 7 | | | May 31 | Killed instantly by mine cars. |
| June 14 | Daniel Salade, | 19 | Single, | | | | | Thumb crushed by mine wagons. |
| July 6 | Joseph Staw, | 23 | Single, | | | | | Injured by pick while mining. |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| July | 20 | William Fellows, | . . | Single, | . | . . . . . . . . . . . . . | . . . . . . . . . . . | . . . . . | Thigh broken by fall of coal. |
| | 25 | John Flynn, | . | Married, | | . . . . . . . . . . . . . | . . . . . . . . . . . | . . . . . | Leg crushed by fall of slate. |
| | 27 | Peter Petuch, | 35 | Married, | 4 | . . . . . . . . . . . . . | . . . . . . . . . . . | July 31 | Killed instantly by fall of coal. |
| | 28 | Joseph Hoover, | 57 | Married, | 4 | . . . . . . . . . . . . . | . . . . . . . . . . . | July 31 | Fatally injured by a fall of coal. |
| Aug. | 7 | James Watson, | 21 | Single, | . . | Eureka, No. 2, | Clearfield, | . . | Foot injured by a fall of coal. |
| | 8 | Daniel Duckworth, | 28 | Married, | . . | Lancashire, | Clearfield, | . | Thigh broken by a fall of coal. |
| | 8 | Mike Perzel, | 27 | Single, | . . | Lancashire, | Clearfield, | Aug. 11 | Killed by a fall of coal. |
| | 8 | Charles McCormick, | 25 | Single, | . . | Fairmount, No. 2, | Clarion, | | Injured by fall of slate. |
| | 17 | Adam Cowan, | 21 | Single, | . . | Franklin, | Clearfield, | Aug. 28 | Killed by fall of coal. |
| | 19 | Joseph Allen, | 22 | Married, | . . | Stoneboro', | Mercer, | . . . . . | Foot broken by mine cars. |
| | 28 | James McAteers, | 60 | Single, | . | Ocean, No. 1, | Clearfield, | . . . . | Fatally injured by fall of coal. |
| Sept. | 2 | Anthony Grainder, | 26 | Married, | . . | Pancoast, | Jefferson, | . . . . . | Collar bone broken by fall of coal. |
| | 5 | Lee Street, | 57 | Married, | . . | Pardoe, | Mercer, | . . . . . | Leg broken by fall of coal. |
| | 14 | Samuel Morgan, | . . | | . . | Sterling, No. 2, | Clearfield, | . . . . . | Head and body bruised by fall of coal. |
| | 14 | John Henderson, | 26 | Single, | . . | Eureka, No. 2, | Clearfield, | . . . . | Foot injured by a fall of stone. |
| Oct. | 6 | Charles Nelson, | 48 | Married, | . . | Columbia, | Clearfield, | . . . | While setting timber the collar fell and dislocated his hip. |
| | 20 | Henry Weston, | 28 | Married, | . | Stoneboro', | Mercer, | . . . . | Foot crushed by mine cars. |
| | 20 | William A. Price, | 66 | Married, | . | Stoneboro', | Mercer, | | Foot broken by a fall of slate. |
| | 23 | Robert Marsden, | 25 | Married, | . . | Webster, | Clearfield, | Oct. 25 | While driving the cars jumped the track and knocked out a set of timbers, allowing the roof to cave in, by which he was suffocated. |
| | 27 | John C. Steel, | 60 | Married, | 8 | New Catfish, | Clarion, | Nov. 3 | Fatally injured by fall of roof. |
| | 30 | William Hutchinson, | 22 | Single, | . . | Moshannon, | Clearfield, | Nov. 1 | Killed by a fall of coal while drawing a rib. |
| Nov. | 15 | Griffith Jones, | 32 | Married, | . . | Eureka, No. 2, | Clearfield, | . . . . | Foot injured by a fall of coal. |
| | 21 | Thomas Pearson, | | Married, | . . | Hildrup, | Clearfield, | . . . . | Injured by a fall of coal while bearing in. |
| | 21 | Jacob Reed, | | Married, | . . | Hildrup, | Clearfield, | . . | Injured by a fall of coal while bearing in. |
| Dec. | 28 | William Fleming, | 15 | Single, | . | Cascade, | Elk, | Jan. 23, 1883. | Fatally injured by fall of stone from the roof while setting a prop in his room. |

## FOURTH DISTRICT.

Hon. AARON K. DUNKEL,
*Secretary Internal Affairs:*

SIR: In accordance with the provisions of the ventilation law of 1877, I have the honor herewith to submit my annual report for 1882, on the condition of the mines in the Fourth Bituminous District, comprising the counties of Bradford, Tioga, Lycoming, Sullivan, Clinton, Centre, Potter, Huntingdon, Blair, and Cambria.

The condition of the coal trade in this district, during the past year, has been very good, and the number of mines have been increased from sixty to ninety, and the production from 3,000,000 tons last year to 3,500,000 tons this year; and during the coming year we may, I think, look for a much larger increase in production.

The greater number of these new mines did not ship very much coal during the past year, but, with the opening of the new year, or early spring, we may expect to see their shipment considerably augmented.

Taking all the mines into consideration, their condition, both as to drainage and ventilation, was an improvement on the preceding year, and while, in a good many places, there is the same reckless waste of coal and loose mode of working going on, yet I am glad to find that there are places where those in charge are not only willing to listen to advice in regard to working coal, but are willing and ready to put that advice in practice, and now wonder they did not adopt it before this.

Again, there are places that are hardly worthy the name of mines, on account of the manner in which they are worked, and yet those in charge are considered smart men, and are very much thought of by those who employ them, for the simple reason that expenses are kept down to the very lowest point, but it is in such mines that we find a lack of doors and bratticing, roads in bad condition, so far as drainage is concerned, and no one to look after the furnace steadily, and, instead of keeping the airways up to the face of the headings, as they ought to do, allow them to fall behind so far as to be practically of no use, and the working of the mine carried on in such a loose slip-shod fashion that I sometimes wonder how the men find their way out of it, let alone bringing out any amount of coal.

And right here I think I cannot do a better service to those mining bosses who may see this report, than to quote from the *Coal Trade Journal* a writer's description of the mode of working in Tioga county. The writer is describing a visit to the mines at Arnot, and speaks as follows:

"A few words as to the mode of working the coal adopted at these mines, and also at the other mines in this county, may interest some of your readers. The work was originally started by driving one main-heading and back-heading, each following what is called the slip, which here runs north 14° west. The double cross-headings were driven out of this at a course of north 63° east, the distance between the cross-headings being two hundred and seventy feet.

"The distance between the main cross-heading and back cross-heading is thirty feet, with cross-cuts every fifty-one feet.

"The ranges (three rooms, of twenty-four feet to a room, in a range,) are driven from the back-heading up to within thirty feet of the heading above, and then stopped; between each range there is left a pillar forty-eight feet in thickness, which is afterwards split in two by a narrow gang-way, about six feet in width, with an occasional cross-cut into the range on either side, as the case may be, for ventilation, and then withdrawn.

"No matter if the ranges on the left or right are closed, by this method of working there is little, if any, coal lost, while the miner works in comparative safety, and the cross-heading pillars, by their thickness, are capable of breaking the roof, in case a crush comes on at any time."

I can fully indorse the above opinion as to the mode of working coal in Tioga county, and may also state that some of our most eminent men look upon that system with much favor, and while there are many places where the above system would not do very well, yet there are a great many places I can point to that have as good advantages as the mines in Tioga county, so far as roof, thickness of coal, and lay of the seam are concerned, and yet a great many of them are in such a condition that when a squeeze comes on thousands of tons of coal are lost, owing to the pillars being left so thin as not to be able to break the roof.

And yet those in charge are considered to be men who are fully competent to manage a mine, and work it properly; and from the simple fact that they have seen no other plan of work, than their own, naturally conclude that their mode of working is the only way. And here I may also mention another thing that has struck me, namely: that there is, more or less, a jealousy between the different mining bosses, and a disposition not to learn anything from another mining boss. There are honorable exceptions to this rule, in the persons of men who are at all times willing to learn from their neighbors, and also to impart information to their less informed fellow bosses.

Of the forty-seven circulars sent out to the operators, thirty-seven were filled out and returned to me, from which I make out the following table:

| | |
|---|---:|
| Number of mines in the district, . . . . . . . . . | 90 |
| Number of persons employed, inside, . . . . . . . . . . | 5,914 |
| Number of persons employed, outside, . . . . . . . . . . | 1,243 |
| Total number of persons employed, . . . . | 7,157 |
| Number of mules employed, outside and inside. . . . . | 730 |
| Number of fatal accidents, . . . . . . . . . . . . . . | 12 |
| Number of non-fatal accidents, . . . . . . . . . . . . | 32 |
| Estimated production in tons, . . . . . . . . . . . . . . . | 3,500,000 |

| | |
|---|---|
| Number of tons per each fatal accident, . . . . . . . . . . | 291,666 |
| Number of tons per each non-fatal accident, . . . . . . . | 109,375 |
| Average number of days worked during the year, . . . . . | 242 |
| Average price paid per ton for mining, . . . . . . . . | 55 cents. |
| Number of coke ovens operated during the year, . . . . . | 578 |

The above estimate, I believe, will be found to be very near the truth, being a little under, rather than above, the true amount.

Yours, very respectfully,

ROGER HAMPSON.

TOWANDA, *February 9, 1883.*

## EXAMINATION OF MINES.

In Bradford county there are three companies operating, viz: Towanda Coal Company, Schraeder Coal Company, and Long Valley mine.

The Towanda Coal Company have at present four drifts working, and are capable of producing one thousand tons of coal per day, there being nearly three hundred men and boys employed in the mines. In two of the drifts most of the pillars are withdrawn, but in the other two mines there is quite a large area of solid coal.

The mines are well ventilated, good roads, well drained, and everything in good order. There is a locomotive employed outside, hauling the coal from three of the drifts.

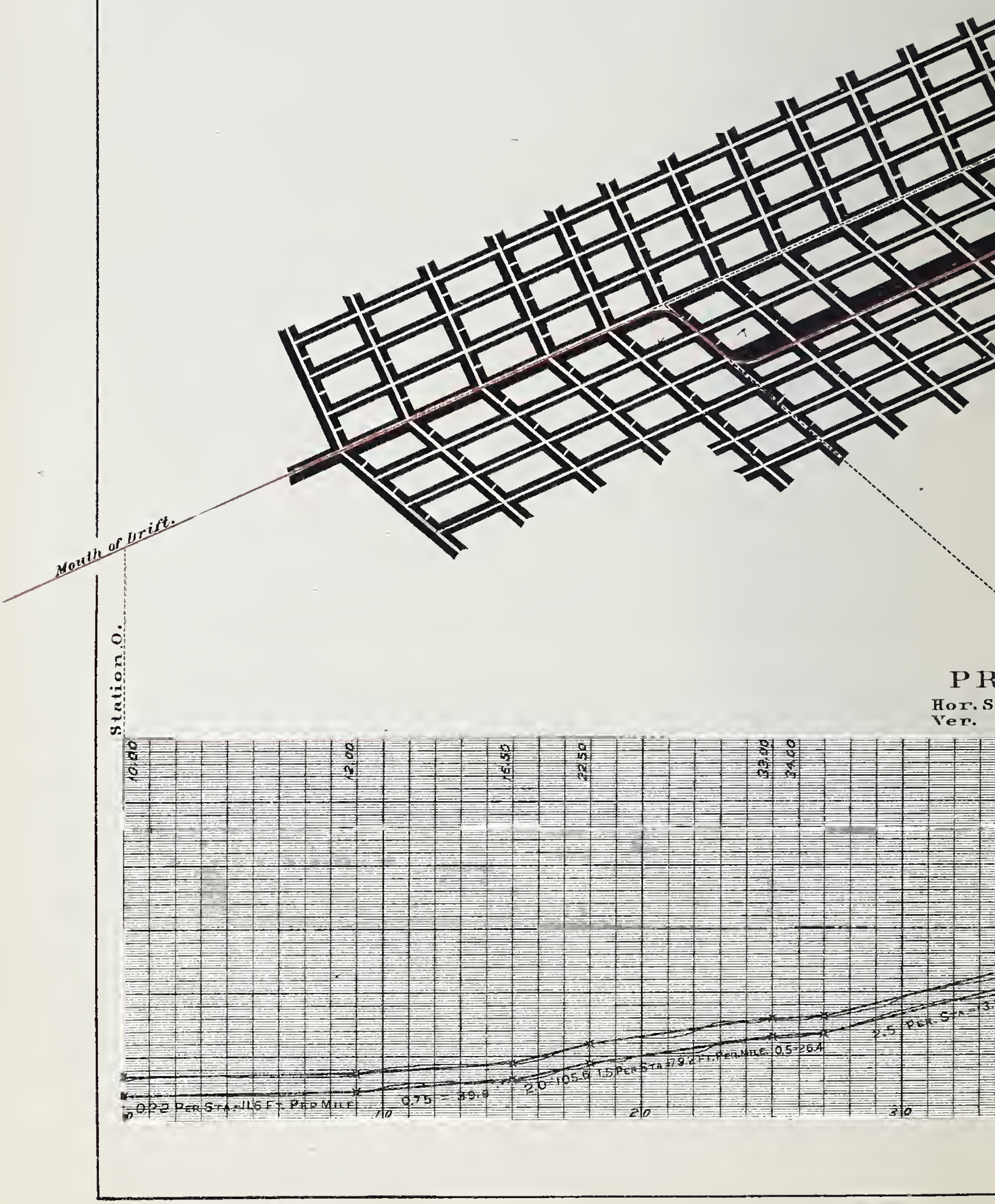
Schraeder mines are located two miles west of Barclay, there being three openings on the vein. Most of the work consists of pillars, and if the mines were run to their full capacity, would not last much over two years. Owing to the surface being so thin, whenever a fall occurs it breaks through to the outside surface, consequently the air-ways are not of much use. Still the condition of the mines for ventilation and drainage is good. There are over two hundred men and boys employed here. Work during the past year has been rather poor.

Long Valley mine is about two miles east of Barclay, and employs about sixty miners. Since my last report on this mine a good body of coal has been opened. The main heading going west went to the dip, as did the cross-headings north and south, and though they have had a good deal of trouble on account of there being so much water to contend with, yet, by the aid of a large syphon and pumps worked by mule-power, they have overcome these difficulties. The condition of the mine, under the circumstances, is now very good, and much credit is due the gentlemen operating it. The Fall Creek Coal Company have sometimes eight or ten miners at work, and at other times none. About two thousand tons of coal per year are produced here.

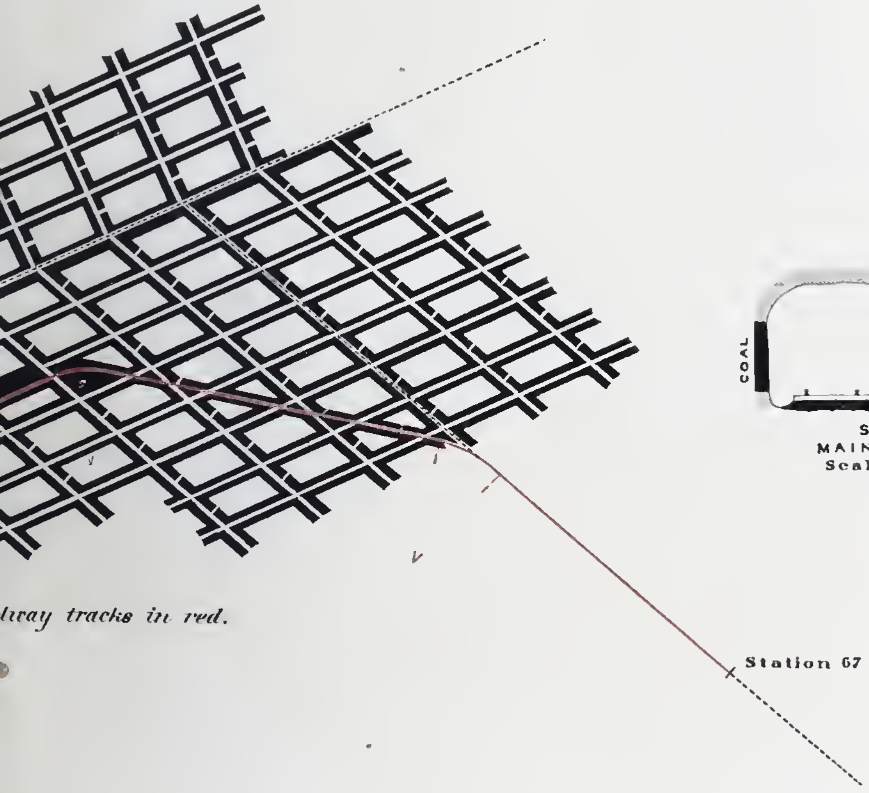
Thirty miles south of Towanda are the mines of the State Line and Sullivan Railroad Company, there being two drifts at present in operation; the new mine having been abandoned for the present on account of the mine going to the dip so very fast. This coal lays midway between the Barclay region and the anthracite region, the coal being classed as semi-anthracite;

## *Map showing part of Mine No. 3 and Engine Road in Blossburg Coal Co's Mines at Arnot, Pa.*

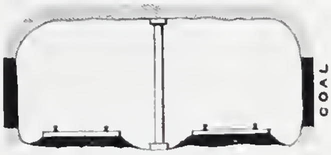
*Scale 750 ft. = 1 in.*



LANE S. HART, STATE PRINTER.



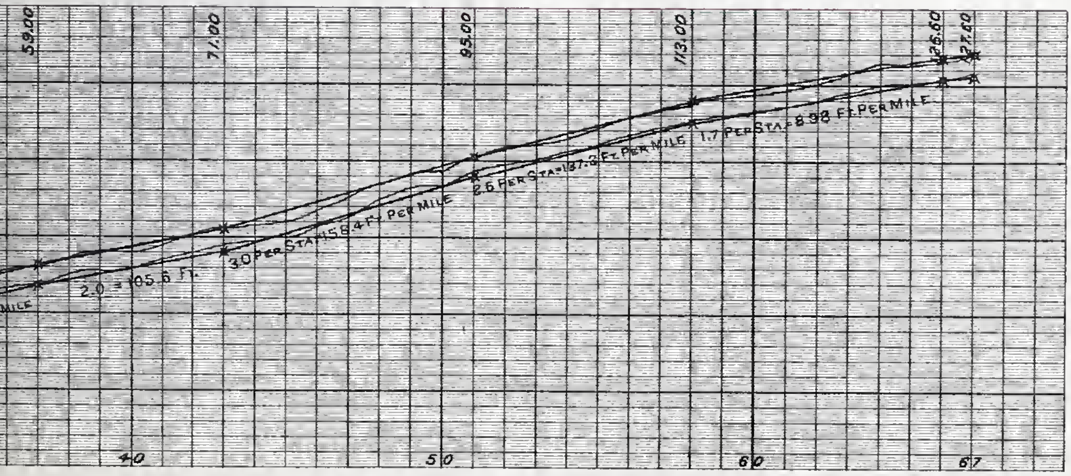
*lway tracks in red.*



SECTION
MAIN GANGWAY
Scale 15ft.=1in.

TILE.

7 30.ft. 1in.
75. ″



the coal being prepared in a similar manner to the anthracite. There are about one hundred and forty men and boys employed here. Condition of mines good, both as to drainage and ventilation. This is the only work in Sullivan county at present.

In Lycoming county are the mines, four in number, of the McIntyre Coal Company, located at McIntyre, and at present they are shipping a large amount of coal, and from appearances these mines cannot last more than about three years. The seam worked is the " E " seam, and the seams underlying this, so far as proved, are not of a very good quality. In two of the mines the work consists of pillars, and the other two have not very much heading work done. The condition of mines as to drainage and ventilation are good, and is well-looked after by those in charge.

At the terminus of the Corning, Cowanesque and Antrim railroad, in Tioga county, are the mines of the Fall Brook Coal Company, there being at the present time five drifts in operation, employing about four hundred and sixty men and boys.

Owing to the vein lying so very flat they are troubled very much with water, and, notwithstanding there being a good water-ditch completed, they are still troubled with water, but they are doing their best to drain their mines. The ventilation of the mines was fair.

There are two locomotives at work here, one running into the No. 1 mine, and the other running into the slope mine. A large air compressor is erected at the No. 1 mine, and will be used for working the Harrison coal-cutting machines.

Arnot mines, four miles from Blossburg, are owned and operated by the N. Y. L. E. & W. R. R. Co., and at present employ six hundred and fifty men and boys in the three drifts now working.

During the past year great improvements have been made here, a tunnel over seven thousand feet in length having been made, and, at this time, the engines are running.

No expense has been spared in making this tunnel, which averages fourteen feet in width, and seven feet in height.*

To provide ventilation for the two mines, Nos. 1 and 3, which are connected together, a large Guibal fan, twenty feet in diameter, has been erected, and is now doing good work.

I made a test as to the amount of air the fan was capable of exhausting, and found that the fan being run at sixty revolutions per minute, the amount was a little over 100,000 feet per minute. At fifty revolutions the amount was 85,000 feet per minute, and, in those parts of the mine furthest from the fan, I found a good current of air.

These mines will now compare favorably, if not surpass, any mines in the bituminous regions, when the extent of the mines and length of air-ways are taken into consideration, and it reflects much credit on the part of those in charge, they having spared no expense whatever in the improvements made. I may mention one good feature about these mines under the new management, that is, the size of the air-ways, which are driven twelve feet in width where the coal is four feet in height, and fourteen feet in width where the coal is under four feet in height.

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* A map showing the tunnel and the workings adjacent to it, accompanies this report.

The drainage of the mines is good, and the condition of the roads excellent.

Morris Run mines were found in very good condition as to ventilation and drainage, a large water-way having been made from the "Old Side" to the Salt Lake mine, a large body of very good coal has been opened, and is now being worked, there being four coal-cutting machines at work there. In the Slope mine there are also four machines at work, and in a short time there will be quite a large body of coal in this part of the Slope mine made available that is now under water, there being a force of men blasting up the water-way so as to drain the portion of the workings now under water.

The East mine and Tioga mine consist of pillar work, but will last for quite a long time yet. These mines give employment to four hundred and eighty men and boys, and are capable of producing one thousand five hundred tons of coal per day when run to their full capacity, as their facilities for getting coal out are very good. The ventilation of these mines is by furnace, and is very good, considering the extent of the mines, there being a good furnace in each drift, and they are very carefully looked after.

Two miles eastward from Morris Run are Fall Brook mines, two in number, giving employment to one hundred and seventy men and boys. This place, ten years ago, was capable of shipping fifteen hundred tons of coal per day, but now it is very far behind the rest of the mines in this county.

No. 2 mine is in a distance of over two miles, and is quite an extensive mine.

No. 3 mine is nothing but pillars, and will last for two or three years yet. Condition of mines fair.

Three miles above Renovo, Clinton county, are the Renovo mines, operated by Richard Langdon, who commenced working them last spring, after their having lain idle for a few years. The coal in these mines is very low, but of pretty good quality, and was quite extensively worked a good many years ago. On my first visit the ventilation was poor, but on my last visit there it was considerably better, there being a small furnace in operation. The plan of the work is single heading, which is, at the best of times, very unsatisfactory, but there are operators and mining bosses all over the country who cannot be persuaded otherwise.

Snow Shoe mines, Centre county, are operated by Berwind, White & Co., and at present there are two mines in operation, Nos. 7 and 8 mines, being both together, and the coal coming out of the one drift. This work consists mostly of pillars, and will soon be worked out.

The Sugar Camp mine was opened by this company during the year, and will soon be their main dependence. A good furnace was built in this mine during the year, and is working very well. The condition of the mines very good.

During the last year No. 9 mine was worked out, and No. 10 mine is abandoned for the present. The plan of the work in the Sugar Camp mine is double-heading, and pillar and stall, and is well looked after. The coal is nearly six feet in height and of good quality.

Somerville mine, operated by Harned, Jacob & Co., was opened during the spring months, and is now shipping quite a large amount of coal.

Condition of mine good, there being two shafts down to the vein. The coal is over five feet in thickness, with a band of bone in the center, and is a strong steam coal. This will soon be a very large work.

Black Diamond colliery, Powelton, Centre county, is nearly worked out, there being very little besides pillars. Condition of mine fair. A new opening is being put in that will give them quite a large body of coal.

Opposite Osceola, Clearfield county, is the Phœnix mine, operated by Orvis & Co. This mine was formerly known as New Enterprise mine, but was purchased by the parties now operating it, and the name changed to Phœnix. On my first visit the mine was in very poor condition, but since then a shaft has been put down and a small furnace put in that has helped it a little. There is no proper system of working at this mine, the headings being driven from fifteen to twenty feet in width, and the rooms turned off and not driven on any special course.

At Boynton Station the Boynton Coal Company have put in two drifts during the year, and also put down a ventilating shaft. The coal is very thin at this place. There are only about twenty men employed, but as the works are opened out the number will be increased.

The Wallace Coal company have put in a new drift during the year. At the time of my last visit there were no men at work except those putting in the drift.

Two miles from Osceola is the Sterling mine No. 3, operated by R. H. Powell & Co., and employing seventy men and boys at present.

Condition of mine fair, worked on double-heading plan, coal about six feet in thickness, and of good quality. A new drift has been put in during the summer, and a tram-road from chutes to drift has been made.

Robertsdale mines, Huntingdon county, are owned and operated by the Rockhill Coal and Iron Company, and consist of a shaft and two drifts. Ventilation very poor, owing to the furnace being located so far away from the working part of the mine. I requested the superintendent to put down a shaft and remove his furnace, so that the ventilation could be improved.

This is a very hard vein of coal to work, owing to its laying in such deep troughs, and making such large amounts of water. The plan of work is single-heading, with air-ways driven in the upper seam, and holes blasted through the rock at intervals of thirty to thirty-five feet.

At Broad Top City, Huntingdon county, are the Carbon mines, operated by Mears Brothers.

Condition of mines fair. There being no furnace, but dependent on natural ventilation.

The mine at the head of the plane was finished during the year, and a new one opened lower down the road toward Dudley. The coal in the new mine is thin and rolling, but of good quality.

A large business was done by this firm during the strike in Maryland, but now it is fallen off very much.

The next mine below this is the Fisher mine, operated by the Reed Brothers, of Dudley. The coal is in two benches, with a rock from two to five feet in thickness between them.

Ventilation fair, the air-courses being well up to the face of the headings.

About a quarter of a mile lower down the railroad is the Moredale mine, operated by Reakirt Bros. & Co., and while the coal has not increased in thickness during the year, the ventilation of the mine has been improved, and if those in charge would see to it that the air-ways are kept to the face of the work, there would not be much cause for complaint.

The next mine we come to on the railroad is the Ocean mine, operated by W. H. Sweet & Co., of Dudley, who, during the past year, have tunneled from the Ocean mine to the Cook seam, which lays immediately under. The coal in the Ocean mine is about three feet in thickness, while the Cook seam is four feet in thickness. Condition of mine fair.

This firm have also re-opened the Cliff mines, below Dudley, and are now taking out the pillars that were left years ago.

Benedict mine was opened during the year by Reed Bros., of Dudley. Condition of mine fair.

R. H. Powell & Co.'s mine, at Minersville, is the next in order, and here we find over one hundred Belgian ovens coking the coal from the mine. This is a very peculiar mine, the coal pitching at an angle, in some places, of nearly forty degrees, the coal being shoveled down in chutes. Condition of mine fair, there being a small furnace in operation.

The old Mitchell mine was re-opened by this firm during the fall, and the pillars will be taken out.

At Johnstown, Cambria county, we have the mines of the Cambria Iron Company, four in number—the Rolling-Mill mine, Cushon mine, Lower-Gautier mine, and Woodvale mine—while a mile further east is the Conemaugh mine, also operated by this firm.

The Rolling-Mill mine is very extensive, there being two hundred men and boys employed in it. The double-heading system has been adopted during the year. Ventilation very good.

Cushon mine employs about eighty men and boys, and was found in very good condition, the ventilation being ample and well looked after.

Lower Gautier mine is not a large work but is in good condition as far as ventilation and drainage are concerned. This mine has been thoroughly overhauled during the year, new roads having been laid and air-ways improved.

Woodvale mine is a small work, the coal being used in the mills around the mine.

Conemaugh mine employs about twenty-five men and boys, and is in very good order, a small furnace giving an ample amount of ventilation, and, like the other mines of this company, is well looked after.

A. J. Haws & Co., of Johnstown, have put down a shaft a short distance from the railroad bridge, and immediately opposite the Cambria Iron Company's works, and are now shipping the coal and mining the fire-clay which is used in their fire-brick works. The shaft is ventilated by a small fan. There is also a drift opening here, in which a small number of men are employed.

This firm has also opened a new mine at South Fork, and at the time of my last visit, were only employing about six men, who were mining both coal and fire-clay.

Argyle mine, South Fork, operated by the Argyle Coal Company, was in very poor condition at the time I visited it. I ordered two of the headings stopped until the air-ways could be brought near to the face of them. By doing this, and also making an opening to the outside, they have got their mine in pretty good order, and have changed their mode of driving headings from single to double. It is the intention of this firm to put in a good furnace early during the coming year, and if those in charge will see to it, that the headings are not driven too far ahead of the air-ways, there would be no fault to find with this mine.

Aurora mine, adjoining, has put down an air-shaft during the year that has very much helped the ventilation of this mine, although the mistake is here made of driving ahead of the air current.

Stineman mine, operated by J. C. Stineman, was found in a better condition than last year, owing to his having driven through to the Euclid mine adjoining. Consequently both mines are in better condition.

The Euclid Coal Company is driving an air-way toward the outcrop, and will then put down an air-shaft.

Old South Fork mine, at the time of my first visit this year, was in very poor condition. I ordered the mining boss to put up some doors and bratticing, which was done, so that at the time of my last visit the ventilation was fair. Owing to the vein going to the dip their work is very limited.

Eureka mine, Summer Hill, is a new work, and not much coal shipped from it yet. There were only a few men at work when I visited them. The ventilation was fair.

Summer Hill Mine, No. 1, at the time of my first visit, was in fair condition, but at the time of my last visit, owing to pure negligence on the part of those in charge, they had a few days before allowed the air-way to close up by removing some pillars that were near it. I ordered a new air-way made immediately, which was done, and now the mine is in fair shape.

Summer Hill Mine, No. 2, was not in good order at the time of my first visit, the roof in the main heading being very bad. I ordered the mining boss to make it safe, and on my last visit found it all right.

The ventilation of the mine was not very good, owing to the airways being so far behind, and the cross-cuts not being properly stopped. The vein of coal is thin and not of the best quality. There are about twelve men employed in this mine.

Martindale mines are two miles from the village of Portage, and are operated by John C. Martin & Co.

One new mine has been opened during the year, and No. 1 mine has been re-opened, while No. 2 mine has been abandoned on account of a very bad fault that was struck early in the spring.

In the No. 3 mine they have a very nice vein of coal four feet in thickness, but the amount of coal above water-level is not very much. Ventilation not very good. They were driving to the out-crop with the intention of putting down a shaft, which will help the ventilation very much.

Sonman Shaft colliery, at Ben's Creek, is operated by Daniel Eldridge. The shaft is ninety feet in depth, and the vein worked is the same as Martindale, No. 3.

Worked on the double-heading plan, and ventilation of mine fair, and everything well looked after.

Sonman mines, 1 and 2, are operated by W. H. Piper & Co., and are in a very long distance, and though on the same vein as Sonman shaft, yet the mines are worked on a very loose system. Ventilation is by furnace, and at my last visit was very poor. The mining-boss being away for a few days, one had a chance of seing how a mine is run when those who have charge are away.

Ben's Creek mine is operated by W. H. Smith & Co., and the ventilation of the mine was very good. The vein of coal is four feet in thickness, and of good quality.

Mentzer's mine, operated by E. W. Mentzer, adjoins Ben's Creek mine, and is ventilated by cutting into the Ben's Creek mine at intervals. Ventilation fair.

This work is getting narrowed up very much, there being a long narrow strip of coal to work on this lease.

Dysart mine, operated by Daniel Laughman, is on the same vein, and is reached by a rock tunnel. Condition of mine fair, but like others, it is at times very much neglected.

Lilly's mine also is operated by Mr. Laughman, and was in fair condition, an opening have been made during the summer. The coal is nearly five feet in thickness, and quite a large amount of coke is made here.

Standard mine, operated by the Standard Coal Company, is worked on the single-heading plan. Ventilation not very good at the time of my last visit. Since then they have put down a shaft that has helped the ventilation very much.

Piper & Co. have opened a new mine a short distance from the Standard, and are now shipping coal from it.

Leahy's mine, at Lilly's station, is operated by Caron Leahy, and is a small mine, sometimes employing fourteen or fifteen miners, and then falling down to four or five, according to the demand for coal. Condition of mine poor.

Glen White Coal and Lumber Company have put down a shaft at Gallitzin, and will soon have quite a large force of men at work. It is the intention to build coke ovens, and use the coal in making coke.

Everything around the shaft is first-class. All the latest improvements in winding-engines and cages, and a very large Deane pump has been put in.

The Juniata Coal Company have leased the Kittanning mine at Bennington, and have put in a new drift during the year, and are now shipping quite a large amount of coal.

Bennington shaft and drift are worked by the Blair Iron and Coal Company, and the coal is used in making coke, there being one hundred ovens at the shaft, while the coal from the drift is coked in open pits. Mines are very extensive, and ventilated by fan. Condition of mines good.

Porter shaft, operated by Denniston, Porter & Co., was in poor condition at the time of my last visit. The operators have since informed me that the ventilation has been improved very much. The mine is worked on single-heading plan and air-ways driven across from one heading to the other, consequently there are times when the air-ways are a good deal behind, and show neglect on the part of those in charge of the mine.

Glen White mine, Blair county, is getting pretty well worked out, there being driven, at my last visit, only two headings and as the coal is only about two feet in thickness, a good deal of ground is gone over in the course of a year. Ventilation of mine by a small furnace, and ventilation fair.

Horse Shoe mines, operated by Baker & Co., are about a mile from Glen White mine, and one mine is on the same vein as Glen White, and the other on the E vein.

Ventilation of the lower mine was very poor, the cross-cuts being built up with fire-clay instead of boards.

The upper vein has a small furnace in operation, and the ventilation here is a little better than the other mine.

A new drift has been put in on the E vein, and they expect to ship coal next summer from it. By a little care and attention being paid to these mines there would be no cause whatever for grumbling; but everything is done in a slip-shod fashion. I suppose it is the expense that is looked at.

Lloydsville mine, Cambria county, is operated by the Bell's Gap Railroad Company, and was found in good condition, the fan giving an ample amount of ventilation. At the time of my last visit there were only two headings being driven, and from present appearances the mine will not last very long.

Great Bend Coal Company have two drifts in operation, about two miles north of Lloydsville, and during the past year have not worked very much on account of a lack of orders.

In the old mine there is a small furnace which gives enough ventilation for the men employed there, and in the new mine arrangements are being made to put in a furnace there. Mines are worked on double-heading plan.

### NEW MINES AND IMPROVEMENTS.

At Bennington, Blair county, the Juniata Coal Company have re-opened an old mine, and also put in a new drift on a lower part of the vein.

Baker & Co., of the Horse Shoe mines, have put in a tunnel for a distance of five hundred yards on the " E " vein, graded one mile of railroad track to it, and widened two and a half miles of narrow-gauge road to wide-gauge.

Haws & Co., of Johnstown, have put a shaft down opposite the rolling mill, and are now mining both the coal and the fire clay. This firm have also opened a new mine at South Fork.

At the Rolling Mill mine, Johnstown, new weigh-office and office for superintendent of mines have been built. New sidings have been laid outside the mine, and the double-heading system has been introduced in the mine.

Lower Gautier mine, belonging to the same firm, has been thoroughly overhauled during the year, and new track and tipples have been built outside.

Aurora mine, South Fork, has been improved by laying iron track in the mine, and a shaft put down for ventilating purposes.

Eureka Coal Company, Summer Hill, have opened a new mine during the year.

Martin & Co., Portage, have put in a new drift during the year, and built a mile of railroad. At No. 1 mine a new tipple and screen have been built, and a pair of thirty-horse-power engines have been placed in position for drawing out the coal by the tail-rope system.

The Standard Coal Company, at Lilly's, have put down an air-shaft during the year.

Piper & Co. have opened a mine and are now shipping coal from it. Mine located about one mile from Lilly Station.

The Glen White Coal Company have put down a shaft at Gallitzin, Blair county, and are now shipping coal.

Great Bend Coal Company have opened a mine and put down an air-shaft. Mine located on the Bell's Gap railroad.

McCartney, Livengood & Palmer have opened a new mine, and also put down a shaft during the year.

Lewis & Manning have opened a new mine and built an incline plane during the year.

Booth & Gray have put in a new drift, and are now shipping coal. These mines are on the Bell's Gap railroad.

At Snow-Shoe, Berwind, White & Co. have opened a new mine, and built a large ventilating furnace.

Harned, Jacob & Co. have also opened a new mine at Snow-Shoe, and put down a shaft for ventilation.

R. H. Powell & Co. have put in a new drift near their Sterling, No. 3.

Mears Brothers are opening a new mine near to the above.

The Wallace Coal Company have put in a new drift during the year.

W. J. Jackson has put in a new drift near Powelton.

Orvis & Co. have re-opened the Phœnix mine, and put down a shaft and built a furnace during the year.

Boynton Coal Company have opened two mines and put down air-shaft.

The above nine mines are in Centre county.

Richard Langdon has opened the Renovo mines, two in number, and is now shipping a large amount of coal from them. These are the only mines at present working in Clinton county.

Mears Brothers, of Broad Top City, have opened a new mine and are now shipping coal.

W. H. Sweet & Co. have tunneled from the Ocean mine, and are now working the Cook seam. They have also reopened the old Cliff mines, below Dudley, and are now taking out pillars that were left years ago.

Reed Brothers have opened a new mine and put down ventilating shaft. They have also built an incline plane, fifteen hundred feet in length, and half a mile of tram-road to the mine.

R. H. Powell & Co. have opened the old Mitchell mine at Minersville.

The above mines are in Huntingdon county.

The Blossburg Coal Company, at Arnot, Tioga county, have made a locomotive tunnel a mile and a half in length, and an average width of fourteen feet and seven feet in height. There has been erected a Guibal fan twenty feet in diameter. The air-ways have been widened, and great improvements made in the ventilation.

At Long Valley mine, Bradford county, a large ventilating furnace has been built during the year.

At Bernice, Sullivan county, a shaft has been put down at No. 2 mine, for ventilation.

### REMARKS ON THE FATAL ACCIDENTS.

Of the twelve fatal accidents that occurred during the year, the majority upon investigation, proved to have been due, more or less, to negligence on the part of those killed; and while I know that no good can result to those who were killed, by pointing out how they were careless and so came to their death; yet, perhaps, a few words to the living may not be out of place in this respect, if it will awaken in them a sense of their duty at all times to watch over their own safety, and the safety of those around them, while at work.

Nine of the accidents that resulted fatally are to be traced to negligence on the part of those killed, and show that they resulted from the failure on the part of the men to see that the rock or bone coal was securely propped before going to work under it, or that the fall of coal they were mining was securely spragged up. Take the case of any of the men killed, as referred to in description of accidents, and it will be found that they were most of them competent men, and must have known they were running a risk in not spragging up the coal, or propping up the rock or bone coal above them, before going under to work, and yet they were willing to run the risk for the sake of getting a car loaded, or the fall mined a little deeper, after being warned it was unsafe, or going right to work under a band of rock without seeing that it was safe to go under. All these things come to our mind, and we are led to conclude that miners, when at work, seem to reason that because a piece of rock, or a mining of coal, has stayed up without falling at some other time, it will stay up this time, and thus a risk is being run, and when a man has trusted the coal or rock, as the case may be, once too often, and paid with his life for so trusting, we see miners, for a few days after, exercising due care and watchfulness in regard to their safety, and then falling back into their old careless habits again.

How often we can go into a miner's place and find him mining under a big body of coal, with few or no sprags under the coal, and when remonstrated with for so doing, and not spragging it securely, are met with the reply, "I intend, as soon as I get this piece of mining backed up, to sprag it." These men intend to be careful, but, somehow or other, it is not now, but in a little while.

We are told that "eternal vigilance is the price of liberty," and I think we may paraphrase the above and say "that vigilance on the part of the miner is often the price of his life," for in no case is vigilance more needed than in the mines, where the miner has to depend on his (at times) feeble light, and to his sense of hearing.

I do not wish to be understood that these men deserve the injuries they meet with through their own carelessness, and are not to be pitied, but I do wish to be understood to say that miners, taken as a class, and from the nature of their occupation, become careless, and there are times when they need to be lectured upon their neglect of the means of making themselves at all times safe, by seeing to it that their places are propped, and that in undermining the coal, it is securely spragged and made safe before venturing to go under it; and we may rest assured that if they will at all times exercise due caution while at work, that they will be an influence for good in their working neighborhood, and men will remark that "So-and-so always keeps his place well propped, and his coal well spragged," and so by their example other men who may, perhaps, be a little careless, may feel an inducement to exercise on their own behalf a little of the caution they see their fellow-miner employ.

### Description of Fatal Accidents.

ACCIDENT No. 1.—On the evening of February 8, a young man named D. O. Kuhns, aged twenty years, was instantly killed on the plane belonging to the Argyle Coal Company, at South Fork, Cambria county. It appears that in running a trip of cars down the plane, the latches at the bottom, by some means or other, had been displaced, and the empty cars went up on the wrong track until they met the loaded trip coming down, and then stopped. The superintendent, Mr. Wilson, and the mining-boss, with Mr. Kuhns, went up for the purpose of lifting over the empty cars, and had lifted two and had commenced to lift over the last one, when the rope, it is supposed, struck the bolt out of the clevis between the first and second loaded cars, and Mr. Kuhns, in springing to one side to get out of the way of the loaded car, slipped and fell with his neck across the rail, and the car passing over it, killed him instantly.

Accident No. 2.—Simon Richardson, a miner employed in the Argyle mine, South Fork, Cambria county, was instantly killed by a fall of coal, February 23.

From the evidence given before the acting coronor, D. W. Luke, it appears that Richardson had fired a shot which did not bring the coal down, and, although he had been warned by a miner, who had been in the place a few minutes before the accident happened, that the coal was loose, he still went under and commenced to mine again, and the coal fell upon him causing instant death.

This accident was the result of carelessness on the part of Richardson in neglecting to sprag the coal before commencing to mine again.

Accident No. 3.—John Jenkins, aged twenty-nine years, was instantly killed at Sonman shaft colliery, Cambria county, March 3, while engaged in undermining, having neglected to sprag it as he went along.

This accident, like the last mentioned, was entirely owing to carelessness on the part of the deceased, who, like hundreds of others, seemed to think the coal would stay up until he had finished mining.

Accident No. 4.—Daniel Henry, superintendent of the Sonman Shaft colliery, Cambria county, was instantly killed April 5. It appears that Henry had been repairing the pumps at the bottom of the shaft, and, thinking he had plenty of time to cross over the shaft, was struck by the descending cage, and on being picked up it was found that his neck was broken.

Mr. Henry was a native of Scotland, and a thoroughly practical miner, well informed on many subjects, and had only held his position a superintendent a little over a month. He leaves a wife and five children to mourn his loss.

Accident No. 5.—George Bodie, a German miner, employed at Bernice mines, Sullivan county, was so seriously injured by a fall of Middle rock on July 6, that he died on July 8.

On an examination being made, it appears that deceased had fired a shot in the bottom coal which failed to bring it down, and going under the rock, (although cautioned against doing so without setting a prop under the rock,) he commenced to dig the loosened coal so as to fill out his car, when the band of rock and the fourteen inch coal above fell upon him

He was got out as soon as possible and removed to his home, but after lingering until evening of the 8th, he died from the injuries received. Deceased was a careful miner and attended very well to the propping of his place, but in this case he seemed to have forgotten his usual caution. In the band of slate that overlays the bottom coal I found there was a slip running through it into the top coal, and in the same direction as the drill hole, while another slip runs through the band at a right angle to the first and intersected with it, and the band and top coal must have been resting upon the bottom coal now loosened, and as soon as he commenced to loosen the coal the whole band and top coal came upon him with the above result.

ACCIDENT No. 6.—A miner named William Wyatt. aged thirty-four years, was killed at the Black Diamond colliery, Sandy Ridge, Centre county, July 10. Deceased, in company with his brother, was engaged in drawing back gangway pillars, and had taken off one fall, the entire length of the pillar, (about ten yards,) and had commenced on the second fall when the bony coal fell upon him, he having neglected to stand a prop under it as his brother had done on his side of the pillar. When removed from under the fall it was found he was injured internally. He lingered until evening and then died. Deceased had not been in the country much over a twelvemonth, and was of a pushing and energetic nature, and in his hurry to get out coal neglected to take the necessary precautions for his safety.

ACCIDENT No. 7.—A fatal accident occurred at Robertsdale mines, Huntingdon county, July 10, by which a miner named Edmund Matthews was instantly killed. Deceased, in company with another miner, was sent to cut through a pillar, so as to shorten the air-way, and had blasted out a prop under the rock, a portion of which fell, and without propping up the rock and top coal standing up, or sounding it to see if it was safe, they commenced to clean up the fallen rock, and had not worked more than three or four minutes when the rock and top coal fell, completely burying Matthews. He was got out as soon as possible, but was dead. This was a case of pure negligence on the part of the two men, who ought to have known better than to have gone under the rock without securing it and making themselves safe. The other man escaped with a few bruises that kept him from his work a day or so.

ACCIDENT No. 8.—John Rosencrans, employed at Sterling, No. 3, Centre county, was killed by a fall of coal, August 15. In company with another miner, deceased was at work in a room, and while undermining was warned by his companion, who said he thought he heard the coal crack. Deceased said it was all right, and his companion went to the mouth of the room and while there he heard a fall of coal, and on going back he found that a large piece of coal had fallen on Rosencrans' head, killing him instantly This is the first accident that has occurred at this mine.

ACCIDENT No. 9.—William Moore, a young man employed at Bernice mines, Sullivan county, was engaged in mining, when a piece of middle rock fell upon him, breaking his back. He lingered for the space of five weeks and then died. Deceased had not been employed in the mines very long, and was working in company with another miner when the accident happened.

ACCIDENT NO. 10.—A miner named John Murphy, aged thirty-seven years, single, was killed in the Cushon mine, Johnstown, August 29, by a fall of coal. Deceased, in company with another miner, had fired a shot in the coal, which was mined to the depth of four feet, and the shot failing to bring the coal down, they had sheared it along the rib right to the back of the mining, and had gone home, leaving the coal still standing up. In the morning Murphy came into the place a few minutes ahead of his companion, and immediately lay down under the coal and commenced to mine, when the coal fell upon him, killing him instantly.

ACCIDENT NO. 11.—Thomas O'Toole, aged sixteen years, employed at Rolling Mill mine, Johnstown, was engaged in wedging down some coal, when it fell upon him, injuring him severely, from the effects of which he died ten days afterward.

ACCIDENT NO. 12.—Daniel Hays, aged forty-six, was so severely injured by a fall of coal, at Snow Shoe mines, on December 2, that he died on the 4th. The accident occurred through neglect on the part of the deceased.

### TABLE I.—*Showing Location of Collieries in Fourth Bituminous Mine District.*

| Name of Colliery. | Name of Company. | Location—County. | Name of Superintendent. | Post-Office Address. |
|---|---|---|---|---|
| Barclay, Nos. 1, 2, 3, and 4, | Towanda Coal Company, | Bradford, | F. F. Lyon, | Barclay, Bradford county. |
| Carbon Run, Nos. 1, 2, and 3, | Schraeder Coal Company, | do. | R. A. Abbott, | Carbon Run, Bradford county. |
| Long Valley, | James Macfarlane, | do. | E. C. Macfarlane, | Towanda, Bradford county. |
| Fall Creek, | Fall Creek Coal Company, | do. | W. M. Mallory, | do. do. |
| Bennington Shaft, | Blair Iron and Coal Company, | Blair, | John Fulton, | Johnstown, Cambria county. |
| Bennington Drift, | do. do. | do. | do. | do. do. |
| Porter Shaft, | Denniston, Porter & Co., | do. | C. H. Porter, | Hollidaysburg, Blair county. |
| Juniata, | Juniata Coal Company, | do. | John Langdon, | Hopewell, Bedford county. |
| Horse-Shoe, Nos. 1 and 2, | S. C. Baker & Co., | do. | Andrew Patrick, | Altoona, Blair county. |
| Glen White, Nos. 1 and 2, | Glen White Coal Company, | do. | David McCoy, | Glen White, Blair county. |
| Rolling-Mill, | Cambria Iron Company, | Cambria, | John Fulton, | Johnstown, Cambria county. |
| Cushon, | do. do. | do. | do. | do. do. |
| Lower Gautier, | do. do. | do. | do. | do. do. |
| Woodvale, | do. do. | do. | do. | do. do. |
| Conemaugh, | do. do. | do. | do. | do. do. |
| Haws' Shaft, | A. J. Haws & Co., | do. | A. J. Haws, | do. do. |
| Haws' Drift, | do. do. | do. | do. | do. do. |
| Haws' Mine, | do. do. | do. | do. | do. do. |
| Argyle, | Argyle Coal Company, | do. | J. P. Wilson, | South Fork, Cambria county. |
| Aurora, | Luke & Heist, | do. | D. W. Luke, | do. do. |
| Euclid, | Euclid Coal Company, | do. | | do. do. |
| Stineman, | J. C. Stineman, | do. | J. C. Stineman, | do. do. |
| Old South Fork, | South Fork Coal Works Company, | do. | George B. Stineman, | do. do. |
| Eureka, | Eureka Coal Company, | do. | N. S. George, | Summerhill, Cambria county. |
| Summerhill Mines, Nos. 1 and 2, | C. A. Dimond & Co., | do. | Stephen Dimond, | do. do. |
| Martindale, Nos. 1 and 2, | J. C. Martin & Co., | do. | John Laxton, | Portage, Cambria county. |
| Sonman Shaft, | D. Eldridge, | do. | | |
| Sonman Mines, Nos. 1 and 2, | W. H. Piper & Co., | do. | John Leahy, | Hemlock, Cambria county. |
| Ben's Creek, | S. H. Smith & Co., | do. | S. H. Smith, | Altoona, Blair county. |
| Mentzer's, | E. W. Mentzer, | do. | E. W. Mentzer, | Hollidaysburg, Blair county. |
| Dysart, | Daniel Laughman, | do. | D. Laughman, | Altoona, Blair county. |
| Lilly's, | do. | do. | do. | do. do. |
| Standard, | Standard Coal Company, | do. | Charles A. Hughes, | do. do. |
| Piper's, | W. H. Piper & Co., | do. | John Leahy, | Hemlock, Cambria county. |
| Leahy's Mine, | Caron Leahy, | do. | Caron Leahy, | do. do. |
| Glen White Shaft, | Glen White Coal Co., | do. | David McCoy, | Glen White, Blair county. |
| Loydville, | Bell's Gap Railroad Company, | do. | R. G. Ford, | Bellwood, Blair county. |
| Great Bend, Nos. 1 and 2, | Great Bend Coal Company, | | | do. do. |
| Snow-Shoe, Nos. 1, 2, and 3, | Berwind, White & Co., | Centre, | George S. Ramsey, | Snow-Shoe City, Centre county. |
| Somerville, | Harned, Jacob & Co., | do. | James Somerville, | Bellefonte, Centre county. |
| Black Diamond, | W. J. Jackson, | do. | A. C. Moyer, | Sandy Ridge, Centre county. |
| Sterling, Nos. 3 and 4, | B. H. Powell & Co., | do. | James Campbell, | Houtzdale, Clearfield county. |
| Phœnix Mine, | Phœnix Coal Company, | do. | John Burns, | Osceola Mills, Clearfield county. |
| Boynton, Nos. 1 and 2, | Boynton Coal Company, | do. | Thomas Estep, | do. do. |
| Wallace Mine, | | do. | | |
| Renovo Mines, Nos. 1 and 2, | Richard Langdon, | Clinton, | David Punchon, | Renovo, Clinton county. |

| | | | | |
|---|---|---|---|---|
| Robertsdale, Nos. 1, 2, and 3, | Rockhill Iron Company, | Huntingdon, | A. W. Sims, | Orbisonia, Huntington county. |
| Carbon Mines, Nos. 1 and 2, | Mears Brothers, | do. | F. J. Mears, | Broad Top City, Huntingdon county. |
| Fisher, | Reed Brothers, | do. | Scott Reed, | Dudley, Huntingdon county. |
| Benedict, | do. | do. | do. | do. do. |
| Moredale, | Reakirt Brothers & Co., | do. | David Conrad, | do. do. |
| Ocean Mines, Nos. 1 and 2, | W. H. Sweet & Co., | do. | W. H. Sweet, | do. do. |
| Cliff Mine, | do. do. | do. | do. | do. do. |
| Powelton, | R. H. Powell & Co., | do. | | Saxton, Bedford county. |
| Mitchell Bank, | do. do. | do. | | do. do. |
| McIntyre, Nos. 1, 2, 3, and 4, | McIntyre Coal Company, | Lycoming, | G. H. Platt, | Langdon, Lycoming county. |
| Morris Run, Nos. 1, 2, and 3, | Morris Run Coal Mining Company, | Tioga, | W. S. Nearing, | Morris Run, Tioga county. |
| Fall Brook, Nos. 1 and 2, | Fall Brook Coal Company, | do. | Frederick Wells, | Fall Brook, Tioga county. |
| Antrim, Nos. 1, 2, 3, and 4, | do. do. | do. | James Pollock, | Wellsboro', Tioga county. |
| Arnot, Nos. 1, 2, and 3, | Blossburg Coal Company, | do. | Henry J. Landrus, | Arnot, Tioga county. |
| Bernice, Nos. 1 and 2, | State Line and Sullivan Railroad Company, | Sullivan, | I. O. Blight, | Towanda, Bradford county. |

**TABLE II.**—*A statement showing characteristics, number of employés, production, &c., of the respective collieries in the Fourth Bituminous Mine District, for the year ended December, 1882.*

| NAME OF COLLIERY. | Character of Coal. (Bituminous or Semi-Bituminous.) | Slope, Shaft, or Drift. | Number of pumps. | Number of engines. | Horse power. | Number of boilers. | Number of miners—men. | Number of miners—boys. | Other employees. | Total employees. | Number of mules inside. | Number of mules outside. | Number of locomotives. | Total production of coal in tons. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antrim, Nos. 1, 2, 3, and 4, | Semi-bituminous, | Drift, | | | | | 459 | | 113 | 572 | 40 | | 2 | |
| Arnot, Nos. 1, 2, and 3, | do. | Drift, | | | | | 792 | | 259 | 1,051 | 125 | | 2 | |
| Argyle, | do. | Drift, | | | | | 50 | | 10 | 60 | 7 | | | |
| Aurora, | do. | Drift, | | | | | 22 | | 3 | 25 | 3 | | | |
| Barclay, Nos. 1, 2, 3, and 4, | do. | Drift, | | | | | 265 | | 120 | 385 | 61 | 7 | 1 | |
| Ben's Creek, | do. | Drift, | | | | | 36 | | 1 | 37 | 6 | | | |
| Bennington, | do. | Shaft, | 1 | 1 | 120 | 7 | 179 | | 11 | 190 | 43 | | | |
| Bernice, Nos. 1 and 2, | Semi-anthracite, | Drift, | 2 | 3 | | 3 | 130 | | 58 | 188 | 28 | 4 | | |
| Benedict, | Bituminous, | Drift, | | | | | 35 | | 6 | 41 | 4 | | | |
| Boynton, Nos. 1 and 2, | do. | Drift, | | | | | 20 | | 5 | 25 | 2 | | | |
| Booth & Gray Mine, | do. | Drift, | | | | | 12 | | 2 | 14 | 2 | | | |
| Black Diamond, | do. | Drift, | | | | | 55 | | 6 | 61 | 8 | | | |
| Carbon Run, Nos. 1, 2, and 3, | Semi-bituminous, | Drift, | | | | | 190 | | 32 | 222 | 25 | 2 | 1 | |
| Carbon Mines, Nos. 1 and 2, | Bituminous, | Drift, | | | | | 50 | | 8 | 58 | 6 | | | |
| Conemaugh, | Semi-bituminous, | Drift, | | | | | 22 | | 4 | 26 | 2 | 1 | | |
| Cushon, | do. | Drift, | | | | | 65 | | 30 | 95 | 8 | | | |
| Cliff Mine, | Bituminous, | Drift, | | | | | 16 | | 1 | 17 | 1 | | | |
| Dysart, | Semi-bituminous, | Drift, | | | | | 57 | | 29 | 86 | | | | |
| Euclid Mine, | do. | Drift, | | | | | 28 | | 2 | 30 | 3 | | | |
| Eureka, | do. | Drift, | | | | | 8 | | 2 | 10 | 1 | | | |
| Fall Brook, Nos. 1 and 2, | do. | Drift, | | | | | 165 | | 59 | 224 | 30 | | | |
| Fall Creek, | do. | Drift, | | | | | | | | | | | | |
| Fisher, | Bituminous. | Drift, | | | | | 25 | | 4 | 29 | 3 | | | |
| Glen White, Nos. 1 and 2, | Semi-bituminous, | Drift, | | | | | 64 | | 18 | 82 | 8 | 6 | | |
| Glen White Shaft, | do. | Shaft, | | | | | | | | | | | | |
| Great Bend, Nos. 1 and 2, | do. | Drift, | | | | | 80 | | 10 | 90 | 10 | | | |
| Haws' Shaft, | do. | Shaft, | | | | | | | | | | | | |
| Haws' Mine, | do. | Drift, | | | | | | | | | | | | |
| Hemlock Mine, | do. | Drift, | | | | | | | | | | | | |
| Horse Shoe Mines, Nos. 1, 2, and 3, | do. | Drift, | | | | | 50 | | 25 | 75 | 12 | | | |
| Juniata, Nos. 1 and 2, | do. | Drift, | | | | | 30 | | 3 | 33 | 3 | | | |
| Loydsville, | do. | Drift, | | 1 | | 1 | 100 | | 5 | 105 | 20 | | | |
| Long Valley, | do. | Drift, | 2 | | | | 60 | | 30 | 90 | 14 | | 1 | |
| Lower Gautier, | do. | Drift, | | | | | 15 | | 5 | 20 | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lilley's, | do. | Drift, | ... | ... | ... | ... | 28 | ... | 17 | 45 | | | | |
| McIntyre, Nos. 1, 2, 3, and 4, | do. | Drift, | 1 | 1 | . . | 4 | 425 | . . | 82 | 507 | 48 | 11 | 1 | |
| Martindale, Nos. 1 and 2, | do. | Drift, | ... | 2 | 30 | . | 55 | . . | 10 | 65 | 5 | | | |
| Mentzer, | do. | Drift, | ... | . . | ... | . . | 65 | . . | 4 | 69 | 11 | | | |
| Mear's Mine, | Bituminous, | Drift, | | | | | | | | | | | | |
| Mitchell Bank, | do. | Drift, | | | | | | | | | | | | |
| Minersville, | do. | Drift, | | | | | | | | | | | | |
| Morris Run, Nos. 1, 2, 3, and 4, | Semi-bituminous, | Drift, | 1 | 4 | 120 | 4 | 559 | . . | 95 | 654 | 54 | ... | 1 | |
| Moredale, | Bituminous, | Drift, | . | ... | . . | . . | 22 | . . | 1 | 23 | 2 | | | |
| Old South Fork, | Semi-bituminous, | Drift, | 1 | ... | . . | 1 | 17 | . | 1 | 18 | 3 | | | |
| Ocean Mine, Nos. 1 and 2, | Bituminous, | Drift, | . . | | . | . | 35 | | 2 | 37 | 4 | | | |
| Porter Shaft, | Semi-bituminous, | Shaft, | ... | 1 | . . | 2 | 98 | . | 48 | 146 | 25 | | | |
| Phœnix, | Bituminous, | Drift, | | | | | | | | | | | | |
| Piper's Mine, | Semi-bituminous, | Drift, | | | | | | | | | | | | |
| Robertsdale, Nos. 1, 2, and 3, | Bituminous, | Shaft & drifts, | ... | . | . . | | 198 | . | 45 | 243 | 14 | 10 | | |
| Rolling-Mill, | Semi-bituminous, | Drift, | . . | 1 | . . | 3 | 200 | . | 58 | 258 | 21 | . . | 1 | |
| Renovo Mines, Nos. 1 and 2, | do. | Drift, | | | | | | | | | | | | |
| Snow Shoe, Nos. 1, 2, and 3, | Bituminous, | Drift, | . | . . | . . | | 218 | . | 30 | 248 | 20 | | | |
| Somerville Mine, | do. | Drift, | . . | . . | | . . | 98 | . | 7 | 105 | 7 | 4 | | |
| Sonman Mines, Nos. 1 and 2, | Semi-bituminous, | Drift, | | | | | 150 | . | 11 | 161 | 21 | | | |
| Sonman Shaft, | do. | Shaft, | 2 | 1 | 40 | 2 | 97 | . | 7 | 104 | 6 | | | |
| Stineman, | do. | Drift, | | . | | | 33 | | 8 | 41 | 5 | | | |
| Standard, | do. | Drift, | . . | . | . | | 35 | | 5 | 40 | 5 | | | |
| Sterling, Nos. 3 and 4, | Bituminous, | Drift, | . | . . | | | 70 | | 4 | 74 | 4 | | | |
| Summerhill, Nos. 1 and 2, | Semi-bituminous, | Drift, | | | | | | | | | | | | |
| Wallace Mine, | Bituminous, | Drift, | | | | | | | | | | | | |
| Woodvale, | Semi-bituminous, | Drift, | | | | | | | | | | | | |
| Total, | | | 10 | 15 | 31 | 27 | 5,914 | . | 1,243 | 7,157 | 730 | 45 | 10 | 3,500,000 |

**TABLE III.**—*A statement showing the method of ventilation, amount of air discharged, number of openings and headings, and size of inlets and outlets in the respective collieries of the Fourth Bituminous Mine District.*

| NAME OF COLLIERY. | How ventilated. | Diameter of fan in feet. | Size of furnace. | Amount of air discharged per minute. | Number of openings. | Number of headings. | Inlet—size of—square feet. | Outlet—size of—square feet. |
|---|---|---|---|---|---|---|---|---|
| Antrim, No. 1, | Furnace, | | 6 x 9 | 60,400 | 2 | 12 | 42 | 48 |
| Antrim, No. 2, | Furnace, | | 5 x 6 | | 2 | | | |
| Antrim, No. 3, | Furnace, | | 6 x 9 | 12.570 | 2 | 4 | 40 | 27 |
| Antrim, No. 4, | Furnace, | | | | 2 | | | |
| Arnot, No. 1, | Furnace, | | 5 x 6 | 25,600 | 2 | 4 | 42 | 72 |
| Arnot, No. 2, | Fan, | 20 | | 75,000 | 2 | 20 | 50 | 42 |
| Arnot, No. 3, | Fan, | | | | | | 100 | 100 |
| Argyle, | Natural, | | | | | 4 | 42 | 30 |
| Aurora, | Natural, | | | | | 2 | 42 | 40 |
| Barclay, No. 1, | Furnace, | | 6 x 8 | 40,000 | 2 | 5 | 72 | 100 |
| Barclay, No. 2, | | | 5 x 7 | 25.000 | 2 | 4 | 92 | 98 |
| Barclay, No. 3, | | | 5 x 7 | 23 000 | 2 | 6 | 40 | 60 |
| Barclay, No. 4, | | | 4 x 6 | 27,000 | 2 | 4 | 36 | 40 |
| Ben's Creek, | Natural. | | | | | | | |
| Bennington Shaft, | Fan, | 12 | | 28,000 | 2 | 4 | 140 | 352 |
| Bernice, No. 1, | Furnace, | | 5 x 8 | 14.800 | 3 | 4 | 30 | 30 |
| Bernice, No. 2, | Furnace, | | | 12,600 | 2 | 3 | 40 | 60 |
| Benedict, | Natural, | | | | | 2 | | |
| Black Diamond, | Furnace, | | 5 x 6 | 6,600 | 2 | 3 | 30 | 30 |
| Carbon Run, No. 1, | Furnace, | | 6 x 8 | 15,560 | 2 | 5 | 100 | 50 |
| Carbon Run, No. 2, | Furnace, | | 5 x 8 | 18.100 | 2 | 2 | 64 | 90 |
| Carbon Run, No. 3, | Furnace, | | 5 x 8 | 12,200 | 2 | 2 | 50 | 60 |
| Carbon Mines, No. 1, | Natural, | | | | 2 | 3 | 36 | 23 |
| Carbon Mines, No. 2, | Natural, | | | | | 2 | 50 | 35 |
| Conemaugh, | Furnace, | | 3 x 6 | 3.607 | 2 | 2 | 36 | 31 |
| Cushon, | Furnace, | | 5 x 8 | 3,875 | 2 | 4 | 64 | 25 |
| Cliff Mine, | Natural. | | | | | | | |
| Dysart, | Natural, | | | | | 2 | 42 | 25 |
| Euclid, | Natural, | | | | | 3 | 32 | 28 |
| Eureka, | Natural, | | | | | 3 | | |
| Fall Brook, No. 1, | Natural, | | | 9.900 | 2 | 7 | 30 | 30 |
| Fall Brook, No. 2, | Natural, | | | 12,200 | 2 | 8 | 35 | 60 |
| Fall Creek, | Natural. | | | | | | | |
| Fisher, | Natural, | | | | | 2 | 36 | 22 |
| Glen White, No. 1, | Furnace, | | 3 x 5 | 6,287 | 2 | 3 | 40 | 30 |
| Glen White, No. 2, | Natural. | | | | | | | |
| Great Bend, No. 1, | Furnace, | | 3 x 6 | 8,000 | 2 | 3 | 56 | 36 |
| Haws' Shaft, | Fan. | | | | | | | |
| Haws' Mine, | Natural. | | | | | | | |
| Hemlock Mine, | Natural. | | | | | | | |
| Horse Shoe Mines, No. 1, | Natural, | | | | | | 30 | 38 |
| Horse Shoe Mines, No. 2, | Furnace, | | 3 x 5 | | | | 36 | 28 |
| Lloydsville, | Fan, | 12 | | 18.000 | 2 | | 33 | 33 |
| Long Valley, | Furnace, | | 6 x 9 | 15,600 | 2 | 5 | 100 | 40 |
| Lower Gautier, | Furnace, | | 5 x 7 | | | | | |
| Lilly's, | Natural, | | | | | | 42 | 25 |
| McIntyre, No. 1, | Furnace, | | 5 x 5 | 9 600 | 2 | 3 | 48 | 48 |
| McIntyre, No. 2, | Furnace, | | 6 x 8 | | | | | |
| McIntyre, No. 3, | Furnace, | | 7 x 8 | 24,000 | 2 | 5 | 48 | 56 |
| McIntyre, No. 4, | Furnace, | | 7 x 8 | 16,000 | 2 | 4 | 35 | 56 |
| Martindale, No. 1, | Natural. | | | | | | | |
| Martindale, No. 2, | Natural. | | | | | | | |
| Mentzer, | Natural. | | | | | | | |
| Minersville, | Furnace, | | 4 x 6 | | | | | |
| Morris Run, No. 1, | Natural. | | | | | | | |
| Morris Run, No. 2, | Furnace, | | 8 x 10 | 48,000 | 2 | 4 | 90 | 72 |
| Morris Run, No. 3, | Furnace, | | 10 x 12 | 40.000 | 2 | 10 | 130 | 66 |
| Morris Run, No. 4, | Furnace, | | 8 x 10 | 42.000 | 2 | 8 | 95 | 52 |
| Moredale, | Natural, | | | | | | 42 | 40 |
| Old South Fork, | Natural, | | | | | | 40 | 36 |
| Ocean, No. 1, | Natural, | | | | | | 36 | 34 |
| Ocean, No. 2, | Natural, | | | | | | 40 | 28 |
| Porter Shaft, | Furnace, | | 4 x 6 | 12 000 | 2 | | 40 | 24 |
| Phœnix Mine, | Furnace, | | 4 x 6 | | | | 36 | 24 |
| Robertsdale, No. 1, | Furnace, | | 6 x 8 | 13,000 | 3 | 6 | | |
| Robertsdale, No. 2, | Furnace, | | 6 x 8 | | | | | |
| Rolling-Mill, | Fan, | 8 | | 43,000 | 6 | | 64 | 72 |
| Renovo Mines, No. 1, | Furnace, | | 4 x 6 | | | | 36 | 30 |

## TABLE III.—*Continued.*

| NAME OF COLLIERY. | How ventilated. | Diameter of fan in feet. | Size of furnace. | Amount of air discharged per minute. | Number of openings. | Number of headings. | Inlet—size of—square feet. | Outlet—size of—square feet. |
|---|---|---|---|---|---|---|---|---|
| Renovo Mines, No. 2, | | | | 10 000 | 2 | 2 | | |
| Snow Shoe, No. 1, | Furnace, | | 6 x 8 | 16 000 | 2 | | 48 | 34 |
| Snow Shoe, No. 2, | | | | 39 000 | 2 | 4 | 33 | 40 |
| Snow Shoe, No. 3, | Furnace, | | 7 x 10 | 39 000 | 2 | 4 | 36 | 40 |
| Somerville Mine, | Natural. | | | | | | | |
| Sonman Mines, No. 1, | Furnace, | | 6 x 8 | 7,800 | 2 | 6 | 42 | 30 |
| Sonman Mines, No. 2, | | | | | | | 42 | 30 |
| Sonman Shaft, | Natural, | | | 2,760 | 2 | 4 | 200 | 40 |
| Stineman, | Natural. | | | | | | | |
| Standard, | Natural. | | | | | | | |
| Sterling, No. 3, | | | | | | | 40 | 28 |
| Sterling, No. 4, | | | | 6,300 | 2 | 4 | | |
| Summer Hill, No. 1, | Natural, | | | | | | 40 | 36 |
| Summer Hill, No. 2, | Natural. | | | | | | | |
| Woodvale Mine, | Furnace, | | 5 x 7 | | | | 40 | 36 |

**TABLE IV.**—*Showing an average monthly statement of the ventilation of the respective collieries in the Fourth Bituminous Mine District during the year 1882.*

| NAME OF COLLIERY. | JANUARY. | | | | | | FEBRUARY. | | | | | | MARCH. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Antrim, No. 1, | 1,460 | 58,800 | 235 | 7,365 | 1,470 | 67,200 | 1,460 | 60,000 | 235 | 7,365 | 1,420 | 62,420 | 1,440 | 60,480 | 235 | 7,365 | 1,432 | 65,436 |
| Antrim, No. 2, | 340 | 11,900 | 240 | 8,640 | 450 | 12,150 | 340 | 11,900 | 240 | 8,640 | 420 | 11,240 | 350 | 12,250 | 240 | 8,640 | 450 | 12,150 |
| Arnot, No. 1, | 340 | 24,480 | 445 | 14 240 | 643 | 27,006 | ... | ... | ... | ... | ... | ... | 300 | 21,600 | 440 | 14,080 | 645 | 27,090 |
| Arnot, No. 2, | 617 | 24.680 | 215 | 9,030 | 374 | 18 700 | ... | ... | ... | ... | ... | ... | 610 | 22 600 | 225 | 9 030 | 400 | 20,000 |
| Arnot, No. 3, | 378 | 24,570 | 425 | 11,136 | 375 | 26,250 | | | | | | | 370 | 24,050 | 430 | 10,320 | 365 | 25,550 |
| Barclay, No. 1, | 240 | 24.000 | 120 | 5,160 | 380 | 38,060 | 125 | 12,500 | 120 | 5,700 | 500 | 20.000 | | | | | | |
| Barclay, No. 2, | 180 | 18,000 | 160 | 6 200 | 300 | 28,600 | 180 | 18,000 | 170 | 6,800 | 330 | 19,650 | | | | | | |
| Barclay, No. 3, | 105 | 10,500 | 180 | 7.200 | 240 | 19,200 | 120 | 10.250 | 160 | 5.450 | 240 | 14,520 | | | | | | |
| Barclay, No. 4, | 240 | 22,000 | 180 | 7,200 | 220 | 18.440 | 240 | 24,000 | 190 | 7,600 | 230 | 23,000 | | | | | | |
| Bennington, | 214 | 30,000 | 161 | 7,600 | 88 | 30.460 | 200 | 28.960 | 150 | 7,400 | 81 | 28.400 | 261 | 28,000 | 140 | 6,000 | 90 | 26,700 |
| Bernice, No. 1, | 130 | 7,800 | 25 | 1,250 | 200 | 8,000 | 135 | 8,100 | 15 | 750 | 220 | 8,800 | 130 | 7,800 | 12 | 600 | 190 | 7,600 |
| Bernice, No. 2, | 123 | 7.500 | | | 250 | 12,500 | 130 | 7.860 | | | 220 | 11,000 | | | | | | |
| Black Diamond, | 110 | 3,300 | 60 | 2,400 | 135 | 4,860 | 250 | 7,500 | 125 | 5,000 | 240 | 8,640 | 210 | 6,200 | 90 | 3,600 | 210 | 7,350 |
| Carbon Run, No. 1, | ... | ... | | ... | 560 | 17,600 | ... | ... | ... | ... | ... | ... | ... | ... | | ... | 269 | 24,479 |
| Carbon Run, No. 2, | ... | ... | ... | ... | 220 | 10,950 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 209 | 10 450 |
| Carbon Run, No. 3, | ... | ... | | | 330 | 29,930 | | | | ... | ... | ... | ... | | | | 549 | 17,293 |
| Conemaugh, | 100 | 3,600 | 50 | 1.500 | 120 | 3,720 | 100 | 3 660 | 48 | 1.440 | 120 | 3,720 | 100 | 3 600 | 48 | 1,440 | 120 | 3 720 |
| Cushon, | 60 | 3,840 | 05 | 3,510 | 165 | 4,425 | 60 | 3,840 | 50 | 2,520 | 165 | 4,125 | 60 | 3,840 | 40 | 2,240 | 165 | 4.125 |
| Fall Brook, No. 1, | 280 | 8,400 | 280 | 6 720 | 240 | 12,000 | 310 | 9.300 | 245 | 8 575 | 250 | 8 700 | 290 | 8.700 | 290 | 6 860 | 285 | 8,850 |
| Fall Brook, No. 2, | 240 | 14,400 | 300 | 7,000 | 290 | 10,150 | 240 | 10,260 | 245 | 5 880 | 270 | 9,450 | 295 | 10,150 | 300 | 7.200 | 240 | 14 100 |
| Glen White, | 160 | 5,940 | 70 | 2 800 | 270 | 5,940 | 165 | 5,940 | 80 | 3,200 | 270 | 5,940 | 180 | 6,480 | 70 | 2 800 | 285 | 6,270 |
| Great Bend, | 145 | 5,800 | 110 | 4 400 | 180 | 7,200 | ... | ... | ... | ... | ... | ... | 200 | 8 000 | 140 | 5 600 | 245 | 9,800 |
| Lloyd's, | ... | ... | | | | ... | ... | ... | ... | ... | ... | ... | 650 | 22,750 | 246 | 8,400 | 640 | 22,400 |
| Long Valley, | 250 | 25,000 | 180 | 9 000 | 400 | 16,000 | ... | | | ... | ... | ... | 310 | 20 900 | 240 | 0 600 | 420 | 20,160 |
| McIntyre, No. 1, | 230 | 9,900 | | | | | 210 | 6,300 | 140 | 4.200 | | | 170 | 5 100 | | | | |
| McIntyre, No. 2, | 200 | 9,600 | 150 | 5,565 | 310 | 16 353 | 200 | 9.600 | 150 | 5,565 | 280 | 14.000 | 170 | 7.500 | 140 | 5.274 | 250 | 13 050 |
| McIntyre, No. 3, | 240 | 10,380 | 180 | 6,438 | 350 | 21 252 | 190 | 13 800 | 220 | 2,540 | 400 | 22.400 | 119 | 14.820 | 220 | 7,220 | 330 | 20.165 |
| McIntyre, No. 4, | 170 | 12,560 | 280 | 9.971 | 230 | 14,732 | 160 | 9 561 | 306 | 4.250 | 210 | 12.860 | 170 | 9,520 | 270 | 4,740 | 230 | 11.730 |
| Morris Run, No. 1, | 430 | 38,700 | 150 | 6,750 | 870 | 62,640 | 435 | 39,150 | 155 | 6,750 | 870 | 62,640 | 430 | 38,700 | 156 | 6,975 | 870 | 62,640 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Morris Run, No. 2 | 420 | 42.500 | 140 | 6,000 | 820 | 49,200 | 420 | 55.000 | 140 | 6,800 | 750 | 54,500 | 420 | 52,450 | 140 | 5.425 | 860 | 54,420 |
| Morris Run, No. 3, | 400 | 36,000 | 160 | 7,200 | 830 | 41,500 | 400 | 36,000 | 155 | 6 975 | 740 | 37,550 | 425 | 50,240 | 143 | 5,724 | 862 | 42,450 |
| Ocean, | 450 | 8,000 | 400 | 7,000 | 300 | 12,000 | 450 | 8.000 | 300 | 2,000 | 300 | 7,000 | | | | | | |
| Porter, | 320 | 12,800 | . | . | . . | | 300 | 12,000 | | | | | | | | | | |
| Robertsdale, | 575 | 17 250 | 180 | 9,000 | 600 | 18 000 | 600 | 18 000 | 400 | 12.000 | 550 | 16,500 | 600 | 18,000 | 450 | 12.240 | 625 | 18,750 |
| Rolling-Mill, | 720 | 46.020 | 400 | 20.000 | 620 | 43 400 | 730 | 46,080 | 395 | 19,750 | 620 | 43,400 | 720 | 46 080 | 395 | 19,750 | 620 | 43.400 |
| Snow Shoe, No. 1, | 300 | 12,600 | 70 | 2,450 | 250 | 13,000 | . . . | . . . . . | . | . | . . . | . . | 360 | 15 120 | 100 | 3 600 | 300 | 15.600 |
| Snow Shoe, No. 2, | 180 | 5 940 | 40 | 1,440 | 200 | 6 600 | . . . | . . . . . | . . | . . . . | . . . | . . . . . | 170 | 5 610 | 50 | 1,800 | 210 | 6,010 |
| Snow Shoe, No. 3, | 200 | 7,800 | 150 | 4,200 | 290 | 8,120 | . . . | | | . | . . . | . . . . . | 300 | 11,700 | 320 | 8.500 | 420 | 11,760 |
| Sonman, No. 1, | . . . | . . . . | . . . | . . . . | . . . | . . . . | 150 | 5 400 | 70 | 1.960 | | | 110 | 3 960 | 75 | 2,100 | | |
| Sonman, No. 2, | . . . | . . . . | . . . | . . . . | . . . | . . . . | 90 | 2,700 | 30 | 960 | 310 | 7,750 | 70 | 2,100 | 30 | 960 | 275 | 6 875 |
| Sonman shaft, | . . . | . . . . | . . . | . . . . | . . . | . . . . | 180 | 5.400 | 210 | 2,530 | 170 | 4,590 | 220 | 6.600 | 150 | 4,050 | 200 | 8 800 |
| Sterling, No. 3, | . . . | . . . . | . . | . . . . | . . . | . . . . | 130 | 5,850 | 90 | 4,320 | 150 | 6,300 | 164 | 7,840 | 110 | 7,110 | 190 | 7,980 |

## TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

| NAME OF COLLIERY. | APRIL. | | | | | | MAY. | | | | | | JUNE. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Antrim, No. 1, | 1,400 | 58,800 | 235 | 7,365 | 1,450 | 65,880 | 1,300 | 54,600 | 240 | 9,300 | 1,455 | 66,510 | 1,440 | 60,480 | 540 | 18,440 | 1,450 | 66,450 |
| Antrim, No. 2, | 340 | 12,250 | 240 | 8,640 | 450 | 12,150 | 340 | 11,900 | 235 | 8,460 | 430 | 11,610 | 340 | 11,900 | 240 | 8,640 | 430 | 11,610 |
| Arnot, No. 1, | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 310 | 22,320 | 480 | 15,040 | 630 | 32,340 |
| Arnot, No. 2, | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | | ... | 575 | 23,400 | 240 | 9,870 | 400 | 20,000 |
| Arnot, No. 3, | | | | | | ... | ... | ... | ... | ... | ... | ... | 100 | 26,000 | 475 | 11,400 | 370 | 25,800 |
| Barclay, No. 1, | 240 | 24,000 | 200 | 8,800 | 380 | 37,500 | ... | ... | ... | ... | ... | ... | 120 | 12,000 | 120 | 5,760 | 380 | 38,000 |
| Barclay, No. 2, | 210 | 21,000 | 170 | 6,800 | 320 | 23,450 | ... | ... | ... | ... | ... | ... | 190 | 19,000 | 200 | 8,000 | 200 | 20,000 |
| Barclay, No. 3, | 220 | 22,000 | 180 | 7,200 | 280 | 22,600 | ... | ... | ... | ... | ... | ... | 165 | 16,500 | 150 | 6,000 | 200 | 20,000 |
| Barclay, No. 4, | 250 | 25,000 | 190 | 7,600 | 270 | 27,000 | | | | | | | 150 | 15,000 | 170 | 6,800 | 190 | 19,000 |
| Bennington, | 200 | 28,900 | 162 | 8,700 | 85 | 29,400 | 205 | 27,900 | 142 | 6,000 | 75 | 26,500 | 215 | 30,800 | 167 | 7,800 | 82 | 29,000 |
| Bernice, No. 1, | 140 | 8,400 | 14 | 710 | 200 | 8,000 | 40 | 8,400 | 14 | 700 | 190 | 7,600 | 140 | 8,400 | 16 | 800 | 190 | 800 |
| Bernice, No. 2, | 130 | 7,800 | | ... | 210 | 10,500 | 130 | 7,600 | | | 200 | 10,000 | 150 | 9,000 | | | 240 | 12,000 |
| Black Diamond, | 190 | 5,700 | 140 | 4,400 | 190 | 6,650 | 185 | 5,550 | 90 | 3,600 | 200 | 7,000 | 180 | 5,400 | 110 | 4,400 | 200 | 7,000 |
| Carbon Run, No. 1, | ... | ... | ... | ... | 240 | 10,200 | ... | ... | ... | ... | 239 | 7,528 | | | | | | |
| Carbon Run, No. 2, | ... | ... | ... | ... | 209 | 10,450 | ... | ... | ... | ... | 149 | 7,450 | | | | | | |
| Carbon Run, No. 3, | ... | ... | ... | ... | 549 | 17,293 | ... | ... | ... | ... | 199 | 18,109 | | | | | | |
| Conemaugh, | 98 | 3,528 | 48 | 1,430 | 120 | 3,720 | 100 | 3,600 | 50 | 1,500 | 120 | 3,720 | 100 | 3,600 | 50 | 1,500 | 120 | 3,720 |
| Cushon, | 60 | 3,840 | 60 | 3,240 | 100 | 4,000 | 60 | 3,840 | 40 | 2,100 | 100 | 4,000 | 60 | 3,840 | 60 | 3,240 | 165 | 4,125 |
| Fall Brook, No. 1, | 285 | 8,550 | 280 | 6,720 | 285 | 8,550 | 280 | 8,400 | 200 | 6,900 | 290 | 8,700 | 280 | 8,400 | 270 | 6,840 | 275 | 8,250 |
| Fall Brook, No. 2, | 295 | 9,075 | 300 | 7,200 | 220 | 12,800 | 300 | 10,500 | 320 | 7,620 | 220 | 13,000 | 300 | 10,500 | 210 | 5,420 | 220 | 13,200 |
| Glen White, | 170 | 6,150 | 65 | 2,600 | 280 | 6,180 | 170 | 6,120 | 60 | 2,400 | 275 | 6,050 | 170 | 6,120 | 65 | 2,600 | 275 | 6,050 |
| Great Bend, | 210 | 8,400 | 175 | 7,000 | 240 | 9,600 | 120 | 4,800 | 110 | 4,400 | 200 | 8,000 | 100 | 4,000 | 90 | 3,600 | 200 | 8,000 |
| Lloyd's, | ... | ... | ... | ... | ... | ... | | ... | ... | ... | ... | ... | 600 | 21,000 | 240 | 8,400 | 630 | 22,050 |
| Long Valley, | | ... | ... | ... | ... | ... | 200 | 7,200 | 120 | 5,700 | 300 | 14,400 | 320 | 11,800 | 280 | 11,600 | 320 | 15,360 |
| McIntyre, No. 1, | 150 | 7,565 | | ... | ... | ... | 200 | 6,000 | | | | | 170 | 5,100 | | | | |
| McIntyre, No. 2, | 180 | 10,800 | 160 | 5,856 | 240 | 10,800 | 180 | 9,000 | 100 | 4,384 | 220 | 10,500 | 175 | 8,850 | 130 | 6,500 | 270 | 13,500 |
| McIntyre, No. 3, | 150 | 14,460 | 110 | 4,694 | 360 | 18,000 | 160 | 14,400 | 200 | 5,600 | 400 | 22,400 | 160 | 12,800 | 200 | 11,200 | 350 | 19,000 |
| McIntyre, No. 4, | 100 | 12,494 | 200 | 7,488 | 270 | 13,500 | 200 | 11,200 | 210 | 8,108 | 300 | 16,800 | 170 | 10,900 | 160 | 8,000 | 300 | 16,800 |
| Morris Run, No. 1, | 430 | 38,700 | 160 | 7,200 | 870 | 62,640 | 400 | 36,000 | 150 | 6,250 | 800 | 57,000 | 435 | 39,150 | 160 | 7,200 | 865 | 62,280 |
| Morris Run, No. 2, | 435 | 56,550 | 150 | 6,750 | 875 | 57,750 | 430 | 55,000 | 155 | 6,975 | 850 | 52,400 | 400 | 52,000 | 150 | 6,750 | 840 | 54,300 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Morris Run, No. 3, | 440 | 39.600 | 170 | 7,650 | 870 | 45,240 | 440 | 39.600 | 170 | 7,650 | 865 | 43.250 | 410 | 36 900 | 120 | 5,400 | 830 | 43 160 |
| Porter, | 300 | 13.200 | | | | | 260 | 11,680 | | | | | | | | | | |
| Robertsdale, | 550 | 16.500 | 400 | 12 000 | 650 | 19.500 | 550 | 16 500 | 425 | 12 750 | 600 | 18.000 | 550 | 16.500 | 400 | 12 000 | 600 | 18,000 |
| Rolling-Mill, | 709 | 46.016 | 395 | 19.750 | 620 | 43 400 | 720 | 46,080 | 400 | 20,000 | 620 | 43,400 | 720 | 46 080 | 395 | 19,750 | 617 | 43 190 |
| Snow-Shoe, No. 1, | 300 | 12.600 | 80 | 2,880 | 300 | 15,600 | . . . | . . | . | . . | . . . | . . | 300 | 12 600 | | | 240 | 12 480 |
| Snow-Shoe, No. 2, | 150 | 4 950 | | | 200 | 6,600 | . . . | . . . | . . . | . . . . | . . . | . . . | 310 | 12,090 | 180 | 5,040 | 480 | 13,440 |
| Snow-Shoe, No. 3, | 310 | 12 090 | 300 | 8,400 | 480 | 13,440 | | | | | | | | | | | | |
| Sonman, No. 1, | 150 | 5 400 | 60 | 1 680 | . . . | | 140 | 5,040 | 80 | 2 240 | 320 | 8,600 | 160 | 5.760 | 80 | 2.240 | 310 | 7,750 |
| Sonman, No. 2, | 90 | 2.700 | 40 | 1.280 | 310 | 7,750 | 70 | 2,100 | 50 | 1,600 | . . . | . | 80 | 2,400 | 30 | 960 | | |
| Sonman Shaft, | 200 | 6 000 | 100 | 2 700 | 200 | 8 400 | . | | . . . | . . | . | . | 180 | 5,400 | 74 | 1,998 | 230 | 2,760 |
| Sterling, | 160 | 7,520 | 80 | 3 840 | 190 | 7,980 | 120 | 5,880 | 60 | 4,330 | 170 | 7,650 | | | | | | |

## TABLE IV.—VENTILATION OF COLLIERIES.—*Continued.*

| NAME OF COLLIERY. | JULY. | | | | | | AUGUST. | | | | | | SEPTEMBER. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Antrim, No. 1, | ... | ... | ... | ... | ... | ... | 1,250 | 52,500 | 250 | 9,750 | 1,300 | 54.600 | 1,240 | 52,080 | 250 | 9,740 | 625 | 26,250 |
| Antrim, No. 2, | ... | ... | ... | ... | ... | ... | 330 | 11,550 | 250 | 9,360 | 435 | 11.740 | 330 | 11,550 | 260 | 9,360 | 425 | 11.475 |
| Arnot, No. 1, | ... | ... | ... | ... | ... | ... | 310 | 22,320 | 480 | 15,040 | 630 | 32.340 | 335 | 24,120 | 470 | 15.040 | 600 | 25 200 |
| Arnot, No. 2, | ... | ... | ... | ... | ... | ... | 575 | 23,400 | 240 | 9,870 | 400 | 20.000 | 700 | 28,000 | 300 | 12,600 | 700 | 35.000 |
| Arnot, No. 3, | ... | ... | ... | ... | ... | | 400 | 26,000 | 475 | 4,400 | 370 | 25,800 | 385 | 25.025 | 435 | 10,440 | 385 | 26,950 |
| Barclay, No. 1, | 100 | 10,000 | 110 | 5,280 | 350 | 35,000 | 120 | 12,000 | 110 | 5,000 | 195 | 19.500 | 190 | 19,000 | 160 | 7,600 | 660 | 42.500 |
| Barclay, No. 2, | 180 | 18,000 | 190 | 7,600 | 340 | 34,000 | 180 | 18,000 | 140 | 6,200 | 240 | 24,000 | 180 | 18,000 | 200 | 8,000 | 340 | 34,000 |
| Barclay, No. 3, | 130 | 13,000 | 120 | 4,800 | 280 | 28,000 | 150 | 15,000 | 190 | 7.600 | 210 | 21,000 | 175 | 17,500 | 160 | 6.400 | 320 | 32,000 |
| Barclay, No. 4, | 200 | 20,000 | 160 | 6,400 | 250 | 25,000 | | | 100 | 4,000 | 200 | 20 000 | | | 176 | 6,800 | 400 | 40,000 |
| Bennington, | 206 | 28,900 | 164 | 7,600 | 85 | 29,400 | 206 | 28,200 | 140 | 6,000 | 73 | 26 700 | 210 | 28,000 | 166 | 7,800 | 93 | 28,500 |
| Bernice, No. 1, | 130 | 7,800 | 12 | 600 | 190 | 7.600 | 140 | 8,400 | 14 | 700 | 220 | 8.800 | 150 | 9,000 | 20 | 1,000 | 200 | 8,000 |
| Bernice, No. 2, | 135 | 8,100 | | | 200 | 10,000 | 138 | 8 100 | | | 190 | 9,500 | 144 | 8.400 | ... | ... | 190 | 9.500 |
| Black Diamond, | 200 | 6,000 | 120 | 4,800 | 190 | 6,650 | 180 | 5,400 | 130 | 5,200 | 160 | 5,600 | 190 | 5,700 | ... | ... | 200 | 7 000 |
| Carbon Run, No. 1, | ... | ... | ... | ... | | ... | | ... | ... | ... | 309 | 28,119 | ... | ... | ... | ... | 269 | 24 749 |
| Carbon Run, No. 2, | | ... | ... | ... | ... | | | | | | 389 | 15 360 | | ... | | | 399 | 15,960 |
| Conemaugh, | 100 | 3.600 | 30 | 1,620 | 160 | 4,000 | 100 | 3,600 | 50 | 1,800 | 120 | 3,720 | 100 | 3,600 | 50 | 1,500 | 120 | 3,720 |
| Cushon, | 101 | 3,636 | 50 | 1,500 | 120 | 3,720 | 60 | 3 840 | 60 | 3,240 | 170 | 4,250 | 60 | 3,840 | 57 | 3,078 | 170 | 4.250 |
| Fall Brook, No. 1, | 290 | 8,700 | 295 | 7.080 | 300 | 9,000 | 300 | 9,000 | 300 | 7,200 | 295 | 8,800 | 295 | 8.850 | 285 | 6,840 | 300 | 9 000 |
| Fall Brook, No. 2, | 300 | 10.500 | 300 | 7,440 | 230 | 13,800 | 310 | 10,850 | 295 | 7,080 | 330 | 13,800 | 310 | 10 880 | 320 | 7 680 | 230 | 13,800 |
| Glen White, | 170 | 6,120 | 75 | 2,600 | 275 | 6 050 | 170 | 6,120 | 75 | 3,000 | 275 | 6,050 | 175 | 6.300 | 65 | 2,500 | 270 | 5 940 |
| Great Bend, | 112 | 4,480 | 75 | 3,000 | 165 | 6,600 | 150 | 6.000 | 112 | 4,480 | 225 | 9,000 | 150 | 6,000 | 124 | 4,900 | 205 | 8,200 |
| Lloyd's, | 550 | 19,250 | 220 | 7,700 | 600 | 21,000 | 480 | 16,180 | 200 | 7,000 | 510 | 17,850 | 470 | 16,450 | 140 | 4,900 | 500 | 17,500 |
| McIntyre, No. 1, | 150 | 4,500 | | | | | 160 | 4,800 | ... | ... | ... | ... | 150 | 4,500 | 100 | 3,000 | | |
| McIntyre, No. 2, | 140 | 7.000 | 140 | 4.200 | 200 | 9,600 | 100 | 4,800 | 100 | 3,000 | 160 | 8,000 | 120 | 5,760 | 110 | 3,300 | 200 | 9.600 |
| McIntyre, No. 3, | 160 | 12,480 | 200 | 6,400 | 380 | 21,280 | 130 | 10,140 | 180 | 8,000 | 300 | 15,800 | 150 | 12,000 | 180 | 6,867 | 400 | 22 400 |
| NcIntyre, No. 4, | 150 | 8,400 | 170 | 3,500 | 300 | 16.800 | 130 | 7.280 | 150 | 7,500 | 270 | 15,120 | 150 | 8.400 | 150 | 7,500 | 300 | 16 800 |
| Morris Run, No. 1, | 400 | 36.000 | 150 | 6 750 | 830 | 58,450 | 430 | 38,700 | 150 | 6 750 | 865 | 52,280 | 430 | 38,700 | 150 | 6,700 | 820 | 57.400 |
| Morris Run, No. 2, | 410 | 52,300 | 140 | 6,300 | 820 | 54 120 | 435 | 36,550 | 140 | 5,232 | 840 | 48.250 | 420 | 42,000 | 140 | 6,000 | 830 | 49,800 |
| Morris Run, No. 3, | 430 | 39,700 | 120 | 5,400 | 825 | 41,250 | 420 | 34,350 | 160 | 7,200 | 820 | 42,500 | 400 | 36,000 | 170 | 7,600 | 810 | 40,500 |
| Porter Shaft, | 260 | 11,680 | ... | ... | ... | ... | 300 | 13,200 | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Renovo, | | | ... | | | | ... | ... | ... | ... | ... | ... | 250 | 12,500 | 120 | 4.800 | 400 | 12,000 |
| Robertsdale, | 600 | 18 000 | 400 | 12.000 | 650 | 18.500 | | | | | . | | 600 | 18.000 | 425 | 12.750 | 525 | 15,750 |
| Rolling-Mill, | 720 | 46,080 | 391 | 19,550 | 616 | 43,120 | 750 | 48,000 | 400 | 20,000 | 620 | 43 200 | 740 | 47.360 | 390 | 19,500 | 610 | 42.700 |
| Snow Shoe, No. 1, | ... | ... | | | | ... | 300 | 12,600 | ... | ... | 240 | 14,400 | 290 | 12,180 | . | | 230 | 13,800 |
| Sonman, No. 1, | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 150 | 5 400 | 50 | 2 000 | | |
| Sonman, No. 2, | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 90 | 2,900 | 20 | 640 | 330 | 8 000 |
| Sterling, No. 3, | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 150 | 6,3 0 | 80 | 4,800 | 140 | 6,400 |

## TABLE IV.—VENTILATION OF COLLIERIES—*Continued.*

| NAME OF COLLIERY. | OCTOBER. | | | | | | NOVEMBER. | | | | | | DECEMBER. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. | Velocity of air current per minute at inlet. | Number of cubic feet passing in per minute at inlet. | Velocity of air current at or near face of heading. | Number of cubic feet per minute passing at or near face of heading. | Velocity of air current per minute at outlet. | Number of cubic feet per minute passing out. |
| Antrim, No. 1. | 1.200 | 50,400 | 240 | 9 360 | 1,440 | 60.690 | 1.300 | 54,600 | 235 | 7,365 | 1,440 | 60.480 | 1,440 | 60,480 | 250 | 9,750 | 1,470 | 66,880 |
| Antrim, No. 2, | 350 | 12,250 | 235 | 8.460 | 430 | 11,610 | 340 | 11,900 | 240 | 8,640 | 450 | 12,150 | 350 | 12.250 | 240 | 8 640 | 450 | 12 150 |
| Arnot, No. 1, | . | . . | . . . | . . . . | . . | . . . . | . . | . . . . . | | . . . . . | . . | . | 340 | 24.480 | 490 | 15,680 | 630 | 26 460 |
| Arnot, No. 2, | . | . . . . | . . | . . . . | . . . | . . . . | . . . | . . . . . | . . | . . . . . | . . . . | . . . . | 1,000 | 64.000 | 440 | 18 480 | 1,100 | 77 000 |
| Arnot, No. 3, | . . . | | . | . . | . | . . | | . | | | . . . | | 400 | 26 000 | 455 | 10.920 | 400 | 28 000 |
| Barclay, No. 1, | 180 | 18.000 | 190 | 9.120 | 480 | 48,000 | 200 | 20,000 | 220 | 10 780 | 320 | 32.000 | 200 | 20,000 | 190 | 9 120 | 590 | 59,000 |
| Barclay, No. 2, | 190 | 19 000 | 180 | 7 200 | 400 | 40,000 | 190 | 19.000 | 230 | 9 200 | 340 | 34,000 | 210 | 21,000 | 200 | 8,400 | 400 | 40,000 |
| Barclay, No. 3, | 170 | 17,000 | 180 | 7,200 | 350 | 35.000 | 180 | 18,000 | 200 | 8,000 | 280 | 28.000 | 200 | 20,000 | 180 | 7,600 | 340 | 34 000 |
| Barclay, No. 4, | | | 170 | 6,800 | 390 | 39,000 | | | 210 | 8 400 | 370 | 37 000 | | | 210 | 8 400 | 310 | 31 000 |
| Bennington, | 200 | 28.000 | 161 | 7,600 | 86 | 29 000 | 205 | 28,600 | 151 | 7,400 | 92 | 26.400 | 204 | 27,800 | 145 | 7,000 | 82 | 28,400 |
| Bernice, No. 1, | 145 | 8 700 | 15 | 750 | 200 | 8 000 | 150 | 9 000 | 16 | 800 | 230 | 9 200 | 150 | 9.000 | 20 | 1,000 | 220 | 8,800 |
| Bernice, No. 2, | 140 | 8.400 | 190 | 5.420 | 200 | 10 000 | 140 | 8,400 | | . | 230 | 11 500 | 155 | 9,300 | | | 230 | 11,500 |
| Black Diamond, | 180 | 5,400 | 60 | 2,400 | 190 | 6,750 | 200 | 6,000 | 140 | 5,400 | 190 | 6,650 | 240 | 7,200 | 180 | 7,000 | 240 | 8 400 |
| Carbon Run, No. 1, | . . . | . . | | | 389 | 15 560 | | | | | | | | | | | | |
| Carbon Run, No. 2, | . . | . . | | | 200 | 18.109 | | | | | | | | | | | | |
| Conemaugh, | 98 | 3.528 | 50 | 1.500 | 122 | 3 782 | 98 | 3 528 | 48 | 1.440 | 118 | 3.607 | 100 | 3.600 | 50 | 1 500 | 120 | 3.720 |
| Cushon, | 60 | 3,840 | 60 | 3,240 | 160 | 4,000 | 56 | 3 584 | 58 | 3 132 | 155 | 3,875 | 60 | 3 840 | 60 | 3 510 | 160 | 4 000 |
| Fall Brook, No. 1, | 290 | 8,700 | 295 | 7.080 | 300 | 9 000 | 330 | 9,900 | 320 | 8 280 | 330 | 9,900 | | | | | | |
| Fall Brook, No. 2, | 220 | 13.200 | 340 | 8.160 | 320 | 11,200 | 230 | 13,800 | 350 | 8.400 | 350 | 12,250 | | | | | | |
| Glen White, | 170 | 6.120 | 75 | 2.900 | 280 | 6 160 | 170 | 6,120 | 65 | 2 600 | 287 | 6,287 | 175 | 6,300 | 60 | 2 400 | 280 | 6,160 |
| Great Bend, | 125 | 5,000 | 100 | 4 000 | 210 | 8,400 | | | | | | | | | | | | |
| Lloyd's, | 470 | 16 450 | 120 | 4,200 | 500 | 17,500 | 500 | 17,500 | 120 | 4 200 | 510 | 17,850 | 500 | 18 550 | 130 | 4,550 | 570 | 19.950 |
| McIntyre, No. 1, | 160 | 4,800 | | | | | | | | | | | | | | | | |
| McIntyre, No. 2, | 100 | 4 800 | 90 | 2.700 | 180 | 10 300 | | | | | | | | | | | | |
| McIntyre, No. 3, | 140 | 11,200 | 200 | 7.488 | 400 | 23 968 | 140 | 13.712 | 200 | 7,488 | 400 | 23 768 | 150 | 14,469 | 220 | 8,018 | 400 | 23,968 |
| McIntrye, No. 4. | 160 | 8,960 | 150 | 5 936 | 300 | 16 800 | 160 | 10.931 | 170 | 6 556 | 300 | 18 536 | 180 | 12 017 | 200 | 7,488 | 300 | 18 536 |
| Morris Run, No. 1, | 440 | 39 600 | 145 | 6,525 | 865 | 62 280 | 435 | 39.150 | 150 | 6,750 | 865 | 60 280 | 400 | 36 000 | 160 | 7.200 | 700 | 50 400 |
| Morris Run, No. 2, | 400 | 52 000 | 150 | 6,750 | 860 | 56,760 | 440 | 57,200 | 150 | 6 750 | 850 | 55 370 | 370 | 42,600 | 150 | 5,600 | 735 | 43.750 |
| Morris Run, No. 3, | 420 | 39.780 | 170 | 7,650 | 800 | 41,600 | 410 | 34 670 | 155 | 7,000 | 790 | 39,500 | 380 | 32.000 | 157 | 7,100 | 760 | 34,200 |
| Porter, | 300 | 12,000 | . . | . . . . . | . | . . . . | 320 | 12 800 | . . . | . . . . . | . . . | . . . . | 315 | 14,800 | | | | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Robertsdale, No. 1, | 600 | 18,000 | 450 | 13,500 | 575 | 17,250 | 575 | 17,250 | 150 | 4,500 | 625 | 18 750 | | | | | | |
| Rolling-Mill, | 718 | 45,952 | 402 | 20,100 | 620 | 43.400 | 718 | 45 952 | 396 | 19,800 | 617 | 43,190 | 720 | 46,080 | 400 | 20,000 | 620 | 43,400 |
| Renovo, | 250 | 12 500 | 120 | 4,800 | 400 | 12,000 | 200 | 10,000 | 130 | 5,200 | 400 | 12,000 | | | | | | |
| Snow-Shoe, No. 1, | 360 | 15 120 | | | 320 | 16 640 | . . . | . . . . . | . . | . . . . . | . . . | . . . | 300 | 16,380 | . . . | . . . . . | 320 | 16,620 |
| Snow-Shoe, No. 2, | 900 | 32 400 | 700 | 33,600 | 1,000 | 36.000 | . . | . | . . . | . | . . . | . . . . . | 800 | 28,800 | 600 | 28.000 | 1,100 | 39,600 |
| Sonman, No. 1, | 130 | 4,680 | 70 | 2 620 | 350 | 8,750 | 90 | 3 240 | 60 | 2,400 | . . | . . . . | 110 | 3,960 | 80 | 2,400 | 260 | 7,800 |
| Sonman, No. 2, | 100 | 3 000 | 50 | 1,600 | | | 60 | 1,800 | 30 | 960 | 265 | 7,950 | 70 | 2,100 | 50 | 1.600 | | |
| Sonman Shaft, | 210 | 6,300 | 170 | 4.690 | 210 | 2 520 | | | . | . . | . . . | | 180 | 5,400 | 75 | 2,025 | 230 | 2.760 |
| Sterling, No. 3, | 120 | 5,040 | 80 | 4 800 | 150 | 6,700 | 150 | 6,300 | 70 | 4,200 | 150 | 6,700 | 170 | 7,140 | 70 | 4,800 | 140 | 6,300 |

**LIST OF ACCIDENTS** *occurring in the Mines of the Fourth Bituminous Coal District of Pennsylvania, for the year ended December 31, 1882.*

| Date of accident. | NAME OF PERSON INJURED. | Age. | Married or single. | Number of orphans. | Name of Colliery. | Location—County. | Date of investigation. | Nature and Cause of Accident. |
|---|---|---|---|---|---|---|---|---|
| Jan. 9 | John Macdonald, | 55 | Married, | | Robertsdale, | Huntingdon, | | Hurt, caught under the descending cage. |
| Jan. 18 | Chauncey Lilley, | 30 | Married, | | Bernice, | Sullivan, | | Hurt by falling down shaft. |
| Jan. 21 | John Reed, | | Married, | | Barclay, | Bradford, | | Face and hands burned by explosion of a small cartridge while carrying it in his hands. |
| Jan. 23 | John Keeney, | | Single, | | Ocean, | Huntingdon, | | Knee bruised. |
| Jan. 24 | Robert Cameron, | 30 | Married, | | Barclay, | Bradford, | | Hurt by running blasting needle in his leg. |
| Feb. 8 | D. O. Kuhns, | 20 | Single, | | Argyle, | Cambria, | | Killed by car on the plane at the Argyle mine. |
| Feb. 8 | Alfred Cockshaw, | | | | Sterling, No. 3, | Centre, | | Severely bruised by fall of coal. |
| Feb. 23 | James Gillen, | 16 | | | Bennington, | Blair, | | Leg fractured; caught between mine cars. |
| Feb. 23 | Simon Richardson, | 21 | Single, | | Argyle, | Cambria, | Feb. 23 | Killed by fall of coal, through neglecting to sprag up the coal while undermining. |
| Mar. 3 | John Jenkins, | 29 | Married, | | Sonman Shaft, | Cambria, | | Killed while undermining, neglecting to sprag up the coal. |
| Mar. 28 | John Allard, | | | | Sterling, No. 3, | Centre, | | Lost little finger while coupling cars. |
| Apr. 4 | John Hays, | 50 | Married, | | Morris Run, | Tioga, | | Both legs broken by fall of slate. |
| Apr. 5 | Daniel Henry, | 32 | Married, | 3 | Sonman Shaft, | Cambria, | | Killed by the cage while crossing the shaft. |
| Apr. 6 | D. Long, | | | | Fisher, | Huntingdon, | | Body bruised by fall of coal. |
| May 12 | James Everley, | 50 | Married, | | Black Diamond, | Centre, | | Foot mashed by fall of coal. |
| May 18 | George Torrence, | 14 | | | Black Diamond, | Centre, | | Bruised by being caught between mine cars. |
| May 19 | Morris Fitzgerald, | 18 | | | Black Diamond, | Centre, | | Thigh bruised by fall of coal. |
| June 1 | Edward Towne, | 28 | Married, | | Snow Shoe, | Centre, | | Thigh broken by fall of coal from corner of pillar. |
| July 6 | George Bodle, | 45 | Married, | 5 | Bernice, | Sullivan, | July 11 | Killed by fall of middle rock and top coal. |
| July 10 | William Wyatt, | 34 | Married, | | Black Diamond, | Centre, | July 12 | Killed by fall of bony coal. |
| July 10 | Edmund Matthews, | 35 | Married, | | Robertsdale, | Huntingdon, | July 12 | Killed by fall of rock and coal. |
| July 14 | Leister Hutzel, | 40 | Married, | | Conemaugh, | Cambria, | | Leg broken by fall of rock and coal. |
| Aug. 4 | John Lamson, | 20 | Single, | | Antrim, | Tioga, | | Burnt by explosion of can of powder while going to their work. |
| Aug. 4 | Julius Swenson, | 20 | Single, | | Antrim, | Tioga, | | |
| Aug. 4 | Thomas O'Toole, | 16 | | | Rolling-Mill, | Cambria, | | Hurt by a fall of coal; died on the 11th from his injuries. |
| Aug. 7 | George Toney, | 25 | Single, | | Arnot, | Tioga, | | Ankle mashed by car dumping up while running down hill; foot amputated since. |
| Aug. 15 | John Rosencrans, | | Married, | | Sterling, No. 3, | Centre, | Aug. 16 | Killed by fall of coal, through neglecting to sprag it up. |
| Aug. 29 | John Murphy, | 37 | Single, | | Cushon, | Cambria, | Aug. 30 | Killed by fall of coal, through neglecting to sprag it up while undermining. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Aug. 29 | William Moore, | | Single, | | Bernice, | Sullivan, | | Back broken by fall of rock; died five weeks afterwards. |
| Sept. 1 | John Bender, | 22 | Single, | | Sonman Mines, | Cambria, | | Leg broken by fall of coal. |
| Sept. 20 | David Coble, | 40 | Married, | | Robertsdale, | Huntingdon, | | Eyes injured by blast. |
| Sept. 24 | Dennis Donovan, | | Married, | | Barclay, | Bradford. | | Arms hurt by fall of middle rock. |
| Sept. 27 | Eric Ganson, | 46 | Married, | | McIntyre, | Lycoming, | | Severely injured in back by fall of roof slate. |
| Oct. 17 | George Shriner, | 54 | Married, | | McIntyre, | Lycoming, | | Hand mashed by fall of coal. |
| Oct. 18 | John Morgan, | 44 | | | McIntyre, | Lycoming, | | Finger taken off while lifting car on track. |
| Oct. 21 | Pat. Flannigan, | 28 | | | McIntyre, | Lycoming, | | Finger taken off by coal catching on roof, while pushing loaded car out of his place. |
| Nov. 3 | Samuel Stover, | 20 | | | Black Diamond, | Centre, | | Arm lacerated by being run over by empty cars, while in the act of braking. |
| Nov. 11 | Patrick Clark, | 58 | | | Bennington, | Blair, | | Leg broken by cars, while stepping to one side of the gangway. |
| Nov. 30 | George Robinson, | | | | Black Diamond, | Centre, | | Fell on a pick while fooling; point penetrating his wrist very deep. |
| Dec. 2 | Daniel Hays, | 46 | Married, | | Snow Shoe, | Centre, | Dec. 6, | Injured by fall of coal, on December 2, and died December 4. |
| Dec. 2 | Michael Glenn, | | Married, | | Snow Shoe, | Centre, | | Leg hurt. |
| Dec. 16 | Edward Cassidy, | 16 | | | Glen White, | Blair, | | Leg fractured. |
| Dec. 20 | Jerry Neal, | | Married, | | Arnot, | Tioga, | | Two toes cut off by a piece of sandstone falling on his foot. |

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